

595.7

B85



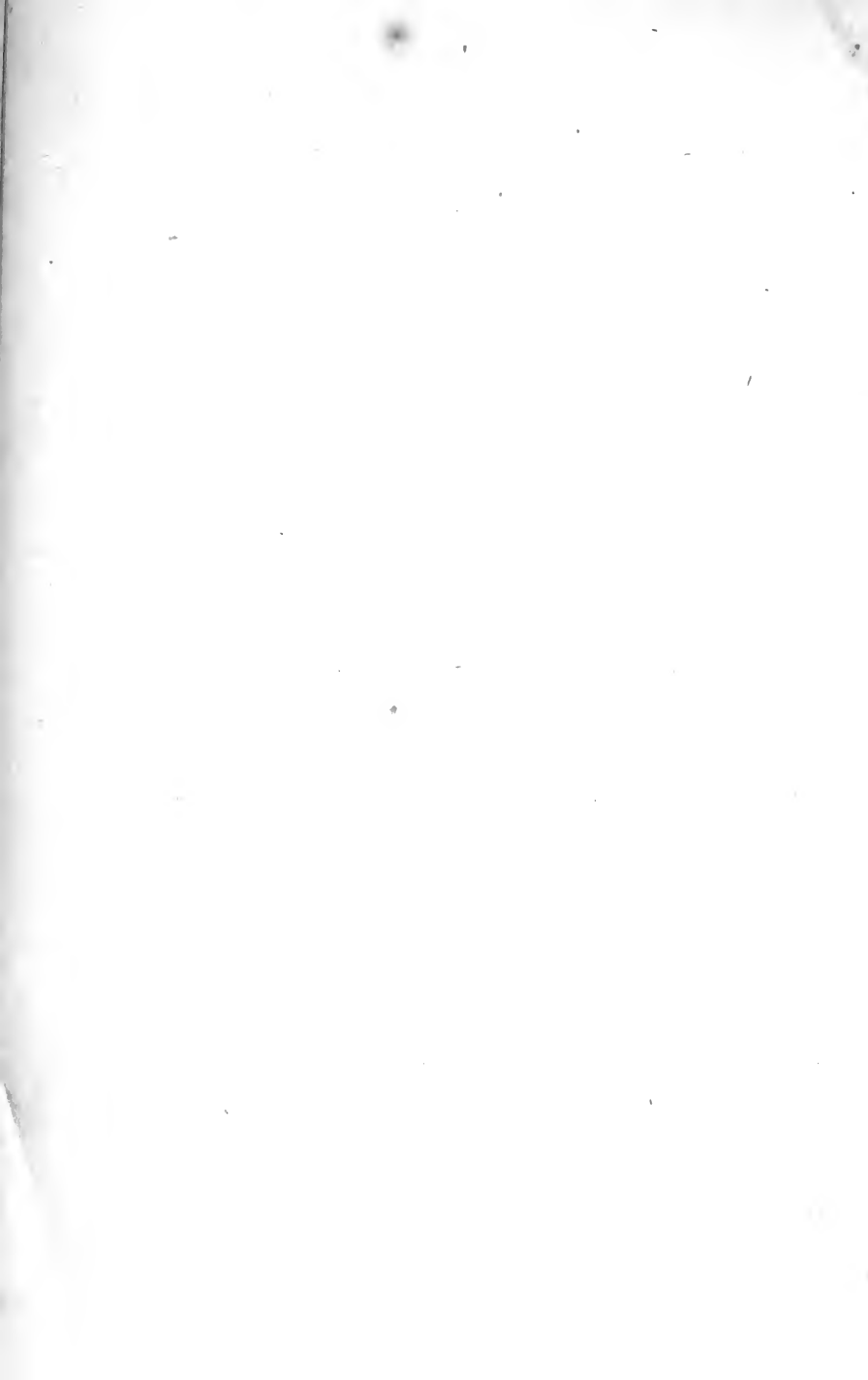
The Andromeda



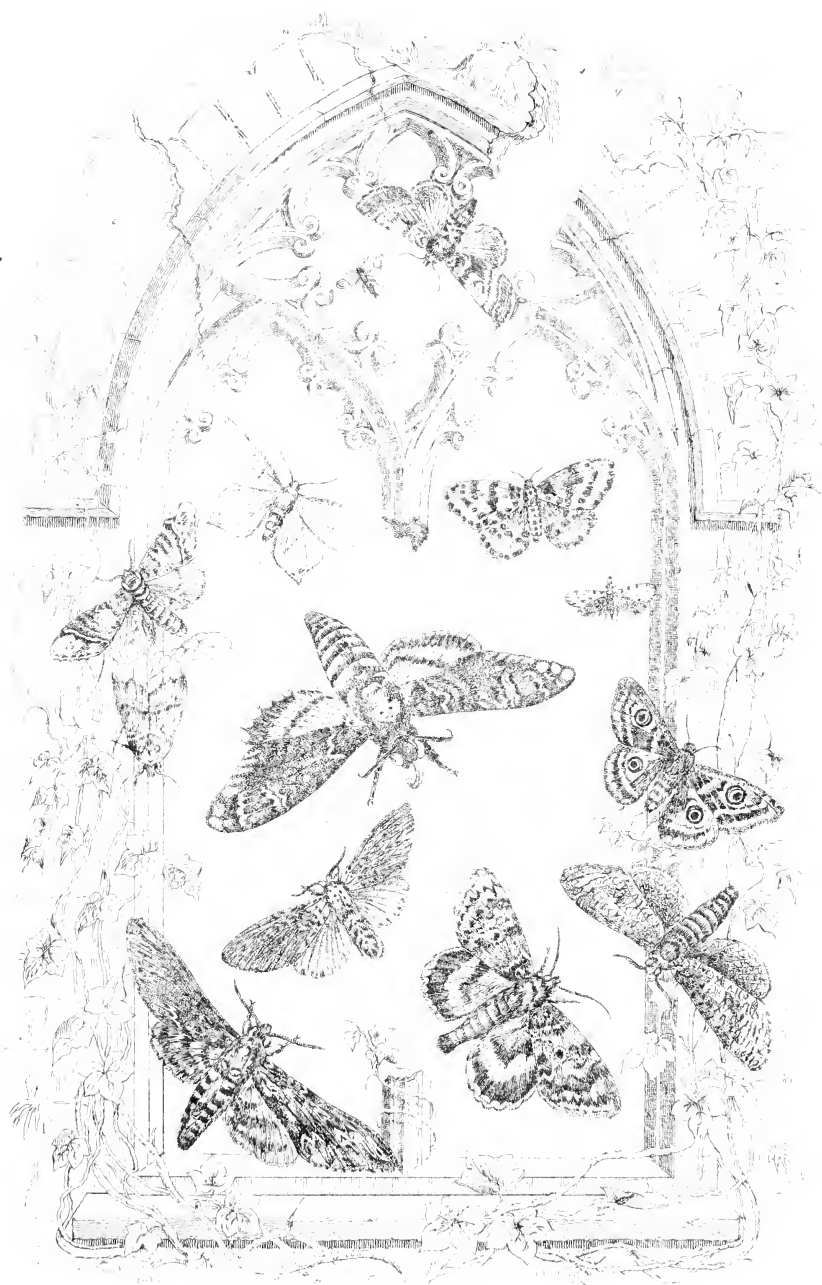
Presented to the
LIBRARY *of the*
UNIVERSITY OF TORONTO
by

The Ontario Legislative
Library





Digitized by the Internet Archive
in 2017 with funding from
University of Toronto



THE BUTTERFLY AND MOTHS OF THE GARDEN

EPISODES
OF
INSECT LIFE.

BY *ACHETA DOMESTICA*, M. E. S.

Second Series.



"So issue forth the Seasons" *Spencer.*

NEW YORK:
J. S. REDFIELD, CLINTON-HALL.
BOSTON: B. B. MUSSEY & CO.
1851.

11188

PREFACE TO SECOND SERIES.

IN presenting to the public a second series of Episodes in Insect History, their Author begs to acknowledge the kind reception which has been so gratifyingly accorded to the first.

If a hope be entertained that the present volume will prove at the least as attractive as its predecessor, it is only because the summer months it comprises have supplied it with more abundance of material,—because the summer sunshine has afforded brighter hues for the enrichment of that particoloured livery wherein, amongst the graver and wiser of Nature's servitors, it would ply its introductory vocation at one entrance of Creation's temple.

VOL. II.—1.

Under an encouraging impression that, in the above capacity, it may have already helped to usher a few (albeit through a side door) into that glorious edifice—some to observe—some to admire—some to adore, the *Insect Chronicle* proceeds cheerfully through the gayest period of winged existence, and the brightest portion of “the varying year.”

CONTENTS

AND

DESCRIPTION OF ILLUSTRATIONS.

Frontispiece.

MOTHS IN GENERAL.

A group of Moths—agents and emblems of decay—holding their twilight or nocturnal revels amidst the ruins of a noble structure, of the transition period from early English to the decorated style,—the work of man.

The large descending flier in the centre of the window is the Hawk-Moth “Death’s Head” (*Acherontia Atropos*); beneath it, to the left, the delicately pencilled “Puss” (*Cerura vinula*); that to the right, still lower, the Red Underwing (*Cotocala nupta*). Following upwards the framework of the window, from its lower right-hand corner, we come first to the Goat-Moth (*Cossus ligniperda*), in downward flight; above, distinguished by its eyed or ocellated pinions, ascends the “Emperor” (*Saturnia pavonia*); higher, and next in order, rises the little Bark Clothes-Moth (*Tinea corticella*); and above, within the point of the arch, the particoloured “Magpie” (*Abraxus grossulariata*). Within the point of the left-hand arch of the window, is the angular-winged “Swallow-tail” (*Ourapteryx sambucaria*). On the same side, descending with the frame, we meet next with the “Buff-tip” (*Pygæra Bucephala*); below, resting on the stone-work, the Herald (*Scoliopteryx libatrix*); and, rising from the left-hand corner, the large, dark-winged Hawk of the Convolvulus (*Sphinx Convolvuli*.) The two

Moths of greatly differing size, within the highest compartment of the window, are an "Angleshades" (*Phlogophora lucipara*), and a little "Clearwing" (*Egeria tupuliformis*).

All the moths in the above engraving are drawn half the size of nature. Most of them, as perfect insects, are described in the episode called 'Moths as Idlers' (p. 302); and some, in their preparatory stages, are referred to in 'Moths as Destructives' (p. 264,) and in 'Moths as Operatives' (p. 228); also, in 'The Tribes of an Oak' (p. 94).

Title Vignette.

"So issue forth the Seasons."

First we have WINTER in his merriest mood, represented by the Cricket, be-decked with Christmas holly, and alive with fun and jollity. By his right hand he holds the Brimstone Butterfly, emblem of SPRING, primrose of papillions in habits and in hue. Beneath, the jocund Grasshopper, linked to the above by a vernal wreath, figures the bright SUMMER, and in the glowing Peacock Butterfly, rich in her velvet train as the autumnal flowers she frequents, we welcome AUTUMN, bearing the ripe sheaf, and presenting her merry associate with the fruit of the vine.

May.

18. THE LADY-BIRD OF OUR CHILDHOOD.

This vignette represents the transformations of the Lady-bird (*Coccinella*). On the large hop-leaf, which occupies the foreground, is a group of eggs; near them, to the left, a grub or larva, devouring a hop aphid; again, to the left, attached to a stalk, is the pupa. Higher, on the right, is a perfect Lady-bird (*C. septem-punctata*), of which genus two other species are figured, one in flight, the other on a stalk 1

"No doubt, Sir, an Entomologist?"

The author, in his character of *Acheta Domestica*, makes a new acquaintance, who keeps Lady-birds 21

19. *COMING OUT.*

Insects of three several orders are here depicted, as emerged or emerging from their pupa cases. On the right, are two caterpillars of the small Tortoise-shell Butterfly (*Vanessa Urticæ*), suspended to the stalks of nettles for their second transformation. They are hung pendent by means of hooks passing through silken loops woven to the stalks; and through the skin of the lowest, which is rent at the shoulders, appears the head of the emerging chrysalis, or pupa. To the left of these, and suspended in like manner, hangs the chrysalis itself, or more properly, its empty skin, on which, recently come forth, stands the Butterfly, with wings hung down for more complete expansion. On the nettle-leaf below, are two empty, barrel-shaped pupa-cases of flies, sometimes parasitic on the same caterpillars; of these, one is prepared for flight, while the other, more recently emerged, appears with wings still damp, white, and crumpled. To the left, on a stalk of mare's tail, (*Equisetum*), is the pupa of a Dragon-Fly (*Æschna varia*), from whence, through a rent on the shoulders, the perfect insect is "coming out." One emerged appears on wing at a distance in pursuit of its butterfly prey 22

"See, Heaven's own emblem of the soul."

The sinner exhorted, by the symbol of insect transformation, to "come out" from the sensual debasements of his fallen nature 43

20. *THINGS OF A DAY.*

The transformations of a May or Day-Fly (*Ephemera vulgata*), form the subject of this Vignette. On the bank is the grub or larva, with the nest-holes, usually below water, which it is accustomed to inhabit. Attached to the grass above is a vacated skin, the complete envelope of a perfect fly, which it always casts off on its fourth or last development. To the right, flies an imago, or perfect insect, as freed from this incasement, while a company of the same are seen disporting at a distance 44

"These stand their purposed day."

An ephemeral establishment for ephemeral education; one, as the other, temporary in design—rotten in foundation 59

21. *INSECT MAGICIANS.*

This vignette is intended to represent the magical effects produced in vegetable growth by the punctures of various Gall-Flies. To the right, on the Briar Rose, are three of the moss-like galls termed Rose Bedeguars, each enclosing eggs or larvæ of the Producing Fly (*Cynips Rosæ*). The Gall-Fly itself is figured to the left, above, and the largest and most gaily coloured insect of the four, also distinguished by a tail-like appendage, is a parasitic Ichneumon (*Calimone Bedeguaris*), as often as the true Gall-Fly an occupant of the Rose Bedeguars. On the rose-leaves above the moss-like tufts are two other galls, globular and spinny, produced by another *Cynips*, also figured above. To the left, on the branch of oak, are various fruit-like galls. The largest, full of perforations, is the common Oak-apple, when turned brown after exit, through these holes, of its Gall-Fly inhabitants (*Cynips Quercus*), one of which is represented in the centre of the vignette. This and the other flies are considerably magnified. On the oak-leaves are several berry-shaped galls, green tinged with red, called leaf or currant galls, and nearly similar to those which hang in bunches from the catkins. Above and below the large Oak-apple, and proceeding from the branch, are two of the artichoke galls of the oak-bud. The excrescence, of somewhat oblong form and variegated colour, attached to a low branch in the centre of the foreground, was drawn from a specimen found amongst many others in Highgate Wood 60

“ *Oh! most royal retribution!*”

Subject to the wand of a Fairy *Cynips*, the shade of the Merry Monarch sits imprisoned in an oak-apple 71

June.

22. *A LOVE AMONG THE ROSES.*

Two of the golden green Rose Chafer (*Cetonia aurata*), seeking their favourite repast of pollen in the heart of a Rose 92

“ *There’s a pet for you!*”

A Stag-Beetle, *Lucanus Servus*, exhibits its playful propensities by tossing a ball of cotton on its horns—no fancy, but attested fact 98

23. *THE TRIBES OF AN OAK.*

In this Vignette are represented a few only of the innumerable insect inhabitants of an Oak. On the leaf at bottom is a group of the black and yellow caterpillars of the Buff-tip Moth (*Pygæra Bucephala*), as they are accustomed to repose in company, after or before a change of skin. Over these, a miniature file of the same, newly-hatched, are marching in order over a leaf, from which, as they proceed, they strip the upper surface. Higher, towards the left, is a nest of silk, with indrawn leaves, woven for winter occupancy by the social caterpillars of a Gold-tail Moth (*Porthesia auriflua*). Dependent by a silken line from the branch above, hangs one of the moth caterpillars termed "Loopers" (*Geometridæ*), of which there are two others, one fixed motionless at right angles with a branch, the other walking, or *looping*, on the edge of a leaf. These occupy the right-hand oak; and on the same, attached to branches, are two of the curious structures of the moth caterpillar called the Oak-bark Builder (*Pyrælis strigulatus*). Several Tent-makers (*Tineidæ*) are traversing the intermediate leaf, and a carnivorous Beetle (*Scarabus clathratus*) is ascending the branches in search of prey . 94

"*Even the acorn has its appropriator.*"

A golden Cicada, a little shovel-headed frequenter of the Oak, plays the part of Jehu to a "Devil's Coach-horse" (or Rove Beetle), harnessed to an acorn car 117

24. *A FEW FRIENDS OF OUR SUMMER GLADNESS.*

This Vignette comprises four Butterflies not figured in the Frontispiece to our First Volume. That on the Thistle to the right, is the Clouded Yellow (*Colias edusa*). That on the left, with folded wings, the Painted Lady (*Cynthia Cardui*). The Purple Emperor (*Apatura Iris*), lessened by distance, soars above, and flitting below is the Small Skipper (*Pamphila lineæ*) . . . 118

"*Sipping their cups of dew.*"

A trio of thirsty Butterflies, the demoiselles *Pontia* and *Vanessa* seated foremost at their leafy board 139

25. *LE LUCCIOLE.*

The Flying Glow-worms of Southern Europe (*Lampyris Italica*), known in Italy as "Le Lucciole," are the insects here represented . . . 140

"*Thou shalt not want for diamonds.*"

The Lucciole, to the Italian peasant objects of dread, have been by the Italian lady employed as articles of decoration—living gems imprisoned in gauze for adornment of her hair . . . 159

*July.*26. *LEASES OF LIFE.*

The winged insect in the centre of the vignette is the common Sewer-Fly (*Eristalis tenax*); beneath, on the bank, are three pupæ of the same, remarkable for their rat-like tails; three others are shown at a distance within the hollow of a decayed willow. Three of the grubs, or larvæ, also rat-tailed, and notable for their tough skins and consequent tenacity of life, appear in the water to the left, but drains and sewers are more properly their inhabit . . . 160

"*They set me at defiance!*"

The power of death defied miraculously by a swarm of Bees, which, according to an accredited relation, became revived under process of boiling with their combs . . . 173

27. *A SYLVAN MORALITY, OR A WORD TO WIVES.*

The three large insects in the foreground are females of the Brown Ant (*Formica Brunnea*), called sometimes Ant-flies. Two of them are actively employed in pulling off their own wings, the third having already divested herself of these appendages. The smaller Ants upon the ground are workers of the same species; those in flight a male and female . . . 174

"*Arrayed in likeness of the Faery Queen.*"

Acheta Domestica in his study surprised by the appearance of the young wife, attired for a fancy ball, in character of Queen Mab . . . 191

28. *BUSINESS AND PLEASURE.*

Bees in their transformations, or the two preparatory stages of grub or larva, nymph or pupa, the latter nearest to the centre of the board. To the right is a piece of honeycomb, with cells of the common form, with a royal or Queen's chamber attached, as most usually, to its outer edge. The two bees on wing are workers 192

"Headless of Business and of Pleasure."

Pleasure with her garland, Business with her cart-rope, try, equally in vain, to raise the drowsy Drone from his luxurious rose-leaf pillow 213

29. *INSECT MINSTRELSY.*

The central and largest insect in this summer's evening group, is the great Green Grasshopper (*Gryllus viridissimus*). Above it, in descending flight, is the common Dor or Clock Beetle (*Geotrupes stercorarius*). Towards the left, rising on the wing, is a Cuckoo-spit Froghopper (*Cicada spumaria*), of which another is traversing the leaf of sorrel dock below. A larva of the same insect occupies a leaf of clover in the foreground, and on the sorrel behind the Grasshopper appears a globular patch of the frothy secretion (popularly Cuckoo-spit), wherein the larva of this Froghopper is usually concealed. The *Cicada spumaria* is not a sound-emitting insect, but is here figured, as resembling in form and being allied in family, with the foreign *Cicada*, or Tree-hopper, of musical celebrity 214

"The classic Cicada, the grassy Gryllus, and the deep-toned Dor."

A musical trio composed of the above 227

30. *MOTHS AS OPERATIVES.*

Conspicuous in the foreground is the "Carpenter" Caterpillar of the great Goat Moth (*Cossus ligniperda*), issuing from its woody cocoon in the hollow of an oak. Various Moth Caterpillars of those called "Tent-makers" (*Tineidæ*), perambulate, under cover of their portable pavilions, the oak-leaf, just over the "Carpenter's" cocoon. Above that, hangs another oak-leaf, cut and rolled by some caterpillar in form of a barrel button. The

hazel-leaf, higher and beyond, cut across its middle and rolled spirally, in form of a pendent tassel, is the work of a small caterpillar, which becomes a variegated, greenish Moth. To the left, on a spray of elder, is a walking-branch caterpillar, of the Swallow-tailed Moth (*Ourapterix sambucaria*), suspended for transformation, in a cradle composed of silk and pieces of leaf. On the other leaves of the same shrub, a "Leaf-Miner" and a "Leaf-Roller," both Moth caterpillars, have exercised their respective crafts; a white serpentine track marks the presence of one, a scroll with silken holdfasts that of the other. On the top of the wall, and composed of grains thence detached, are two little pyramids, built and occupied by tiny caterpillars called "Stone-masons," from the material thus employed 228

"Head amongst caterpillars of his craft."

Cossus, the Master-Carpenter of Moth Operatives, on the look-out for business in heart of oak and willow 251

August.

31. A SUMMER DAYS DREAM.

Seated on the stripped willow-branch to the left, is the grotesque caterpillar of the Puss Moth (*Cerura vinula*), the Moth itself being figured beneath. Below appears the singular masked larva of a Dragon-Fly. The centre of the foreground is occupied by a Dor or Clock-Beetle (*Geotrupes stercorarius*). To the right appear the head and shoulders of another common insect of the same order—the Oil Beetle (*Proscarabus*); and above and between these, with wings extended, is a Devil's Coach-horse, or Rove Beetle (*Staphylinus olens*.) Attached in sphinx-like attitude to the right-hand branch, is the beautiful caterpillar of the Privet Hawk-Moth (*Sphinx Ligustri*) 252

"That victim no idle fly."

A giant in augmented bulk takes vengeance on his enemy of the broom . . . 271

32. FAIR AND FIERCE.

The three beautiful and rapacious insects forming the subject of this vignette, are Dragon, Scorpion, and Lacewing Flies. The first, a small and common

species (*Agrion*), rests upon a hedge while discussing its cannibal repast, a captured gnat. Hovering just above is the Dragon-Fly's enemy, and sometimes conqueror, the Scorpion-Fly (*Panorpa*), so called from the appendage to its tail. To its left appears the graceful Lacewing (*Hemerobius*), green and golden-eyed; the rose-leaf to the right, below, being occupied by a grub, or larva (magnified), of the same carnivorous insect busy in its usual occupation of destroying *Aphides* 272

"Tremble on the approach of your arch-destroyer."

A trembling "White" of the garden about to fall into the embrace (to Butterflies always fatal) of a great Green Dragon-Fly 283

33. RESEMBLANCE AND RELATION.

The mimicry of vegetable by animal forms is here illustrated by figures of some looping caterpillars, termed "Walking branches," and by that of a moth, the Oak Lappet (*Gastropacha quercifolia*), likened to a Walking Leaf. Above the latter, fixed motionless to a branch of hawthorn, which it closely simulates, is the caterpillar of the Brimstone Moth (*Rumia crataegata*), the moth itself appearing in flight above. On the left, another stick caterpillar—that of the Swallow-tail Moth (*Ourapterix sambucaria*), is attached to a branch of elder, of which it affords a close copy in form, colour, and markings. A second specimen of the same in its walking position forms an arch upon the branch below 284

"Queer creatures! neither grass nor grasshoppers."

Museum visitors, lost in astonishment at the vegetable-seeming insect specimens from India and China, the leaf-like, and its relative, the stalk-like *Mantis* 301

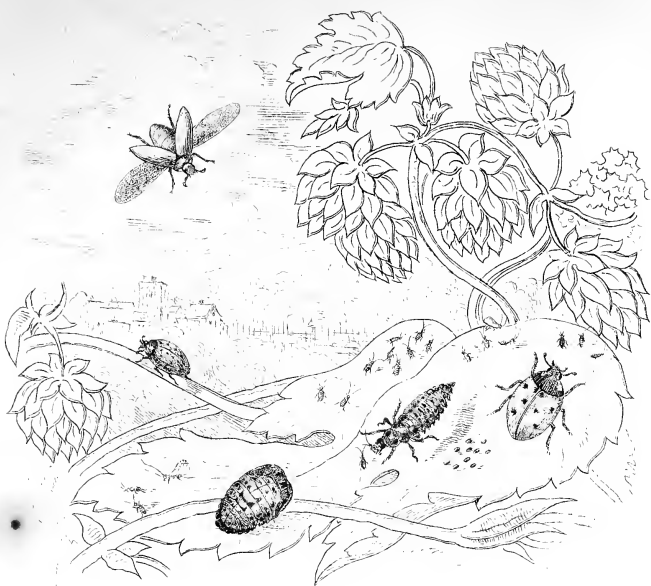
34. MOTHS AS IDLERS.

The Moths in this group are of those not figured in the frontispiece. That in the foreground, beneath the white convolvulus, is the common "Tiger" (*Arctia caja*); the smaller insect above, is the Humming-Bird Sphinx (*Macroglossa stellatarum*), uncoiling its tongue for insertion into the flower. The large one to the left, the Lime-Hawk (*Smerinthus Tiliae*). Above, in upward flight, is the elegant "White Plume" (*Pterophorus pentadactylus*);

next, beneath it, is the little "Clearwing" (*Egeria tipuliformis*); and, below this, a "Vapourer" (*Orgyia antiqua*), of which the nearly wingless female occupies, still lower, a branch of hawthorn supporting also the cocoon, which she employs as a bed for the reception of her eggs . 302

"*Luxurious feeders amongst lazy flutterers.*"

A trio of Moths drinking deeply of honeyed wine, out of a flower flagon . 326



THE LADY-BIRD OF OUR CHILDHOOD.

“Give me leave
To eat my fill, and I will through and through
Cleanse the foul surface of the infected leaf.”

MANY who exterminate Spiders as a matter of merit, crush Earwigs without remorse, and hold *Black-Beetles* in abhorrence, look with involuntary kindness on the little *Red-Beetle*, styled a Lady-bird. For this especial favour she stands indebted partly to her pretty spotted gown, and partly to her being associated with the earliest recollections of our childhood. A word or two, *en passant*, on Nursery Rhymes, on that one at least which is pertinent to our subject :

“Lady-bird! Lady-bird! fly away home,
Your house is on fire and your children alone !”

Now, in reality, instead of flying to the rescue of her own innocents, her business is most probably to murder and devour a score of other innocents, clustered together on a hop or rose-leaf; or, in other words, to make a luscious meal of *Aphides* or Honey-dew Insects, of whom her Lady-birdship is exceedingly fond—fond as a wolf of a flock of sheep.

So stands the fact; and the nursery fiction may, perhaps, in these matter-of-fact times, be impugned for giving a notion purely imaginary concerning the Lady-bird's "house" and her "children," and her probable course and business when released from her captor's grasp. Yet, what matters it? The simple couplet may implant a wrong notion, but that is soon corrected; and it may implant, also, a right feeling likely to abide. It urges to humanity at the expense of selfishness; to set at liberty the pretty prisoner of which the childish captor is so proud, that it may go to the rescue of its distressed little ones. Such, at least, is the spirit in which we imagine this address to the Lady-bird to have been originally dictated to some little child long since grown gray and mouldered into earth.

The Lady-bird, or *Coccinella*, has many claims upon our kindness in addition to those which it possesses as the favourite of our childhood. Of our manhood it is also the useful friend, however little we may so regard it; and it is, *par excellence*, a friend in all weathers. It greets us in early spring, enjoys the summer with us, stays by us through the fall of the leaf, and

even in mid-winter often emerges from its hybernal retreat, as if on purpose to remind us of more cheerful seasons, past and to come. Perhaps, on account of its hardihood,—an endowment for which it is no doubt in some measure indebted to its highly varnished covering,—the Lady-bird has acquired amongst our catholic neighbours the appellation of *Vache à Dieu* and *Bête de la Vierge*, as though it were a creature especially favoured by providential care. These names, however, are somewhat more applicable if the insect be regarded as one of those little, but not unimportant agents, whereby the kind Creator is accustomed to confer benefits; and that for such we are indebted to the *Coccinella* is a fact with which every gardener,—every one at least who knows how to distinguish between friend and foe,—is practically acquainted. He sees his rose trees and honeysuckles and other favourites of his care, laden with blight insects (the *Aphides*, or Plant-lice, whose history we need not now repeat), and on finding their multitudes gradually thinned, he knows that he is mainly indebted for their riddance to exterminating Lady-birds, which, aided by two or three allies, confer on the hop-grower a similar benefit.

By entomologists the Lady-bird is regarded as a beautiful example of his favourite order of Beetles (*Coleoptera*), and when the pencil of nature furnishes him with a rare or newly coloured variety, he looks upon it as a prize. It was the striking prettiness of a black and yellow Lady-bird, added to

its extraordinary vitality in flying away after an immersion of four and twenty hours in ardent spirits, which first attracted the attention of Kirby, and led him, for the amusement and benefit of thousands, to adopt the study of insects. Yet of the millions who are well enough acquainted, by sight, with this common Beetle, so gaily distinguished from the darker brethren of its order, how few know a single word about its history, or suspect that, besides being a pretty, it is a useful, little animal.

Nearly everybody has a knowledge, more or less accurate, of the transformations undergone by Moths and Butterflies, (the *Lepidoptera* of naturalists,) but not many perhaps are aware that most other insects go through similar changes. Those of the Lady-bird are very curious, and the difference of form between its long flat figure in the first or *larva* stage of being, and its half spherical shape as a winged Beetle, is scarcely less striking than that betwixt the Butterfly and the Caterpillar from which it has expanded.

But let us begin with the beginning of the Lady-bird's life, even from its commencement in the egg shell. The eggs are of a bright yellow, small, flat, and oval; and, laid close together in patches of a score and upwards, are to be found throughout the spring and summer, glued to a variety of leaves. It must not be imagined, however, that the mother insect by whom they are thus deposited is ever so regardless of the welfare of her family as to commit it, while in embryo, to the barren

surface of the first leaf falling in her way. The cubs of a lioness or a wolf deserted on a smooth green island, whereon was no one living creature save themselves, would find their wants about as well provided for, as would be those of an infant brood of Lady-birds on an uninhabited leaf. In other words, exactly what browsing flocks and herds of deer are to the quadruped of prey, the tribes of *Aphides* are to the Lady-bird. Carnivorous herself, she takes care that her children, when the sun wakes them into life with similar but yet more devouring propensities than her own, shall have abundance of living food for their exercise conveniently at hand; and for this purpose she fails not to select as their nursery a leaf, most frequently of rose-bush, hop, or honey-suckle, but of what sort soever, one sure to be peopled by, or closely contiguous to, the insect live-stock so essential to their support.

It is in this its earliest stage of grub or *larva*—the most voracious if not the most active of its life—that the *Coccinella* plays its most important part in the reduction of the *Aphis* million, both in gardens and hop-grounds, where the latter is popularly known as “the Fly.”—As an instance, among thousands, of that beneficent care which never fails to provide an antidote against every evil, natural as well as moral, it has been observed that a relative proportion is in most seasons observable between the number of plant-destroying *Aphides*, and that of *Aphis*-eating Lady-birds. Kirby mentions that in 1817 the shore of Brighton was covered with swarms of the

latter, fresh arrived from the hop-grounds where each in its larva state had slain its thousands of victims. Of the long, flat, wingless bodies of these children of the Lady-bird, so dissimilar to that of their parent when arrived at her rotund maturity, and so seldom identified with the adult insect, our figure will convey a better notion than detailed description, and a glance at the living *larvæ*, or grubs themselves, the best of all. Few are the rose-trees, hop-vines, or nettles, whereon they may not be found in abundance in the month of May.

The second shape which the Lady-bird puts on is that of the *pupa*, correspondent to the *aurelia* or chrysalis of a Butterfly. To know what is the form then assumed, our readers would do best to seek it on the above-named plants, where after a previous glance at our figure they will be at no loss to discover the original. As for the history of our Lady-bird's life, in this its second epoch, a few words suffice, because it is that in which there is very little life about it. Having, in a few weeks, gorged as a grub her fill of *Aphides*, she fixes herself by a sort of natural glue, either to a stalk or to the under surface of the leaf which has served the purpose of pasturing her devoured flock. Thus secured from falling, she puts off the pupa skin with the limbs which were requisite to obtain her prey; and then, in a form of outward inactivity, bides the time until by inward working and expansion she has arrived at the perfection of her nature. Casting off her slough, she now emerges in all the polished rotundity and painted finish of

a Lady-bird complete, known and recognised as such by all observers.

Numerous are the variations of colour and pattern wherewith the pencil of nature delights to enamel the convex surface even of a Lady-bird's wing, or, to speak more correctly, *wing-cases*, under cover of which her delicate transparent pinions are curiously folded. Upwards of fifty different *Coccinellidæ* have been enumerated, mostly distinguished by the numbers of their spots set upon various grounds—red, black, or yellow. Of these perhaps the *Two-spotted* and the *Seven-spotted** are most common, and the *Twenty* or *Twenty-two-spotted*† of a light yellow, with eleven spots on each wing-case and five on the thorax, the most elegant. A beautiful variety is described and figured by Curtis, which he calls the eyed or ocellated, from its having red wings with black spots encircled by yellow. We have met now and then with specimens both red and yellow, in which the painting has been made to assume a checquered character by the substitution of squares for spots.

The Lady-bird mature is still, as in early life, a feeder on *Aphides*, and she is for ever to be observed in the carnivorous act of their destruction. It is said, however, that her voracity decreases with her age, and that instead of pursuing her prey (as when a grub) into the narrow folds of a leaf or retired recesses of a bud, she is content to victimise the open feeders within her more convenient reach.

* *Coccinella bipunctata* and *septem-punctata*.

† *C. vigintiduo-punctata*.

It is mostly in cold weather that Lady-birds love (like the rest of us) to creep into snug corners, and then, also, either for the sake of warmth or company, they display social propensities not observable amongst their tribe in summer. It is true that in sunshine and the milder seasons, when they most abound, they are often to be seen by scores in company; but on these occasions it is pretty evident that, as with a flock of vultures on a battle-field, where their prey is—there (and thereby attracted) they are gathered together. But some other and, probably, more social motive would seem to draw towards one another the congregated Lady-birds which towards and during winter are often found assembled in the same hybernaculum, sometimes by two and threes, but more often in numbers which preclude the supposition of each having made its way by accident to the same cranny. We found last November in a hole of a gate-post no fewer than fifteen of these red-coated comrades laid up, doubtless, for their winter's sleep, to be broken only in open weather by an occasional stroll in search of some of the hardier *Aphides* which furnish them, between their long abstinences, with no unwelcome meal.

We know of nothing else remarkable about the Lady-bird, except one personal peculiarity not of the most agreeable sort, with which none who have ever handled this little insect can fail to be acquainted:—we mean, of course, that peculiar odour which has led some people to confound it in idea, as well as appellation, with an insect whose very name savours of

offence. This forbidding quality is supposed to be defensive, serving as a protection against birds and other enemies. Connected, probably, with the same endowment, and suggested by it, were the curative uses, now obsolete, to which Lady-birds were once applied. The common Two-spot variety ejects from its joints, when touched, a yellow fluid of powerful though not agreeable musky odour, to the supposed virtue of which secretion has been attributed its employment as remedy for tooth-ache; and to the same cause it owes, doubtless, its place in the *Materia Medica* of old, as a cure for colic.

Perhaps even these by-gone and problematic uses might be proved by experiment not quite imaginary; but the undoubted, obvious, and important service performed for man by the Lady-bird or Coccinella race, is that wherewith we commenced this brief memorial of their merits, namely, their extensive agency in keeping under the *Aphides* or Blight Insects so inimical to vegetation. But for them, and some two or three allies, not a lover of sweet posies could gather a rose unsullied or a honey-suckle undefiled. Let us, for this, do all honour to this red-coated race, preservers of our favourite flowers; but above all, let each lover of well-hopped liquors drink in his glass of "October" destruction to "the Fly," and prosperity to the Fly-destroying "house" and "children" of the Lady-bird!

THE CAGED LADY-BIRDS.

A FRAGMENT.

HAVING given the natural history of the Lady-bird, we will narrate a short "record of the heart," in which one of these parti-coloured favourites of childhood happened to play a more than usually important part. We picked up the story in the course of a ramble for the purpose of collecting insects. So far, therefore, it comes connected with our main subject, and if (however true) it should appear to some improbable, and silly even as an old nurse's tale, it follows not unaptly on a nursery rhyme.

One evening last June, as we were strolling in the neighbourhood of Highgate, wholly occupied in examination of the hedges beside us, and never thinking of a heavy thunder-cloud behind, which hung threateningly over the sun-lit spires of the metropolis, a huge rain-drop, spreading to half-crown diameter, suddenly darkened the dust at our feet. The fall from the clouds of the coin itself could scarcely have surprised us more. Down came a second—then patter—patter—a hundred more of tokens similar,—largesse of Heaven's overwhelming bounty, from which it was high time to seek escape. But how! Ours was no high-way, but a bye-way,—far from sight and sound of friendly omnibuses. No tree was at hand with head large enough to make an umbrella;

there was only one solitary cottage which stood a few yards distant, but that to our comfort had a porch, within which we were presently ensconced. Yet as the torrents continued to descend, we soon found our place of refuge less secure than we had deemed it. The porch was merely a rough trellis thickly covered with clematis, and as the creeper got gradually soaked, its yielding branches falling inwards, served only as conductors of the dripping deluge. Here we would take occasion to observe how a favourite pursuit may serve in some sort as a shield against annoyance and impatience; for even while our sorry shelter was each moment lessening, we could not but admire the gnats that were dancing up and down between the rain-drops—enabled by their acute sight and agile wings to elude the falling streams which would else have been to them as overwhelming water-spouts. We were not, however, so entirely engrossed by thinking of the midges' wondrous preservation as to be quite regardless of our own predicament, and now halted, in our shower-bath, between the two more active measures of running desperately through the torrent before us, or of invading the peace of the cottage in our rear. Our mind was made up to adopt the latter alternative, and a hand was already stretched towards the little black knocker, when—the door opened and a tall thin old man, in appearance what has been called the shabby-genteel, invited us to enter, with a courteous expression of regret at not having seen us sooner. Having stood long enough already, we did not stand on

ceremony, but stepping over the door-sill, found ourselves, at once, in a snug little front parlour. The charity of our good Samaritan did not stop here, for taking down from a convenient peg a long grey threadbare coat, he insisted on our exchanging for it our dripping garment which he carried, himself, to dry at his kitchen fire.

When, in pursuance of this hospitable purpose, the old gentleman had unsuspectingly shut the door upon us, we took—not the old-fashioned silver watch which hung over the mantle-piece, but—an honest survey of the room; in a strange apartment no uncommon procedure, often affording at a glance some considerable insight into its occupant's pursuits and character. The very name of a small suburban parlour comprehends a kidderminster carpet, four or six heavy horse-hair chairs which have once stood in a patrician dining-room, a glazed corner-cupboard set out in glittering array, a sorry looking-glass, a table whose quality is hidden by a checquered cloth, red stuff curtains, a green fender, brass-footed, with stove of narrow capacity, veiled (in summer) by a gaudy efflorescence of cut paper. All these are general characters belonging to the genus of parlours such as that into which the storm had introduced us; but amidst these, what we were looking for was some distinctive mark of our new friend's individuality.

Something like this was apparent in a small but well-filled book-case; and a much used copy of Thomson's Seasons which lay upon the table, bespoke him, half cockney as he was, not

insensible to the soft influences of nature. Flanking the watch-tower on the mantle-shelf was a profusion of shells, in the midst of which, like monsters of the deep, grinned, on each side one, a pair of corpulent Chinese bronzes. Perhaps our friend, in his youth, had "occupied his business in great waters"—but yet such maritime and oriental ornaments are prevailing decorations in such apartments.—One thing was evident—there was no womenkind about the good man's house: not a work-basket, a pair of scissors, a nutmeg-grater, or even a thread on the carpet to indicate female occupancy. The old man must be a bachelor;—but no,—over the fire-place hung a portrait, and a very good one, of a pretty woman in the dress of a lady some forty years ago, and below it the miniature of a sweet little girl, whose innocence looked out of a pair of large blue eyes cut exactly after the same pattern as those of the elder portrait. No doubt then he was a widower. So far satisfied, we turned our eyes towards the window to see how long we were likely to encroach on his hospitality—and then first noticed in the window-seat a square glass-case, raised by some books to bring it on a level with the light. It was roofed with gauze and floored with wet sand, wherein was stuck a branch from a white rose-bush, which we perceived, on looking closer, to be peopled by some half dozen of large Lady-birds. The insects were almost too many to be there by accident: the rose-branch, too, was well furnished with *Aphides*, their favourite fare, and seemed therefore as if chosen expressly for their accommodation.

The glass-case was certainly then a cage for Lady-birds, and the old gentleman must be, it followed, a brother entomologist. We had just arrived at this conclusion when the parlour door re-opened and in came our stranger friend, followed by a Hebe in curl-papers, bearing on a tea-tray a smoking jug, a pint bottle, and two capacious goblets of different shapes and sizes. "The gentleman must take something warm as an antidote against taking cold."—There was no rejecting the proffer without wounding the kindly spirit,—perhaps also the pride of the offerer. We attempted indeed something about the storm being now over; but partly against our will and partly with it, (for we were curious to know what sort of observation our brother naturalist was making upon Lady-birds,) we found ourselves reseated by the checquered table—our entertainer's *vis à vis*.

During the process of compounding the elements, and before the starting of another subject, we pointed to the glass-case. "No doubt, Sir, an entomologist?" A shake of the head overset at once our previous conclusion.—"Beg pardon, Sir—I thought from that, that like myself you were fond of studying the habits of Insects: but most likely you have some little friend—perhaps some favourite grandchild, for whose amusement——" "No," said the old gentleman, "No—I have no one—I am a solitary old man.—But indeed, Sir," he added with a melancholy smile, "you are not the first who has wondered at my foolish fancy for keeping those little

creatures. Some, I dare say, have set it down as the amusement of my second childhood ; and,—God help me !—perhaps they are not far wrong.”

As the level rays of the setting sun, which had gleamed forth after the storm, entered the window and fell upon the old man’s face, we perceived his eyes glistening with unusual moisture. But no rheum of imbecility did it seem :—an effusion, rather, drawn up by memory and feelings, fresh and powerful, from some well-spring of affection which age had left unfrozen.

We were sorry to have touched upon what was at all events a tender theme in return for the good man’s kindness : and though our curiosity concerning the petted Lady-birds was whetted rather than allayed, we took care to say nothing more about them, and, fearing to commit a double error, forebore all notice of the portraits. After an hour’s sitting, our well dried coat was resumed and we rose to depart.

Yet, as with hearty acknowledgments we tendered our hand to our kind entertainer, we relished not the thought of shaking his for at once the first time and the last. Our card was proffered—“ It would give me real pleasure, Sir, to return your hospitality.”—The old gentleman bowed—“ You are very kind,” said he, “ but I believe, Sir, that your rambles are generally longer than mine, and if, in compassion to an old man’s infirmities, you would now and then take another rest at my poor abode, you would make me even more your debtor.”

The sprinkling of romance which was once scattered over the surface of our character, has long ago (like the painted dust from off the wings of a chased butterfly) been brushed away by the world's rude collision. Nor indeed seems there a shadow of romance in the meeting above described between two elderly gentlemen—yet as we walked homewards, enjoying the sweetness of the freshened evening air, we almost felt as if we had met with an adventure of which the *dénouement* was yet to come. Even as we turned restlessly upon our pillow, floating visions of gigantic Lady-birds in gold frames, and diminutive ladies in glass cases swam before our drowsy optics. Our first morning thoughts turned also upon our friend of yesterday. He was no entomologist,—he was not in his second childhood (with the obsolete satirists of the last century, two states of being almost synonymous) and yet—he kept a cage of Lady-birds.—Were we destined ever to fathom this profound mystery? We were.

Our first visit to Providence Cottage led to many more, in the course of which the old gentleman opened to us much of his heart and history. He related to us, by snatches, a common tale.—He told us of losses in trade—loss of health—loss of an affectionate devoted wife, one who for love of him had left a higher station, and never by look, word, or deed reminded him of the sacrifice. But chiefly did he speak of one beloved child who, when wealth and health and wife were gone, stood him for a while instead of all.—Of this child only,

and only of her as connected with the caged Lady-birds, shall we repeat a part of his relation. In her seventh year she,—his little Rachel,—was seized by severe illness, through which her heart-stricken father was her sole and constant nurse. If he had possessed the means, no hireling would he have paid to tend his darling child: but he was poor, and thus poverty and will met for once in sweet consent.

On the morning of the fourth day after her attack, the restless uneasiness of the little sufferer subsided into a deep and quiet slumber. The tired watcher, who, while fatigue and despair together weighed down his broken spirit, had found it hard to resist the drowsiness of exhausted nature, was roused to trembling wakefulness by the flutter of hope within his heart. He knelt beside the bed—"Oh! let not this blessed hope prove a mere delusion. Save, merciful God, my only treasure! or if——." The weakness of the flesh forbade to express in words, the dread alternative, but with head bowed low, the father remained for a few moments in an attitude, at least, of resignation. When he rose from his knees, the rush-light had expired, and a ray of bright sunshine, entering at the round hole in the shutter, fell upon the slumberer's features which were still composed in quiet rest. Poor Gregory drew the window-curtain quite close; then quitted the chamber and descended to the garden. The air refreshed his throbbing temples, but chilled by his night vigil, the morning sun as it glistened on the dew-drops, seemed to

impart no warmth to his benumbed frame, and no good augury to his trembling heart. Before this sun goes down (thought he),—and fearing he scarce knew what each moment he was absent from his post, he hastened to resume it, but not till he had hastily plucked a little bunch of flowers. But one day previous he would not have dared to gather them, to decorate the sick chamber, then most likely to become, ere night, the chamber of death; but now there was hope, at least, in that quiet slumber. It had not been broken when the father returned, but in a few moments the sleeper's eyes opened and, as if the intense affection of her parent's gaze had been felt even through the closed lids, turned directly towards the fond anxious face beside her.

"I've brought my Rachel a pretty nosegay," said he, as he stooped forward to kiss her, and laid the flowers on the coverlid. The child, grasping them in her little thin fingers, raised them to her faded face.

"Stay, darling, there's a Lady-bird on that white rose, let me put it out."

"Oh, pretty Lady-bird!" cried the little girl, her large sunken eyes lighting up for a moment with childish delight. "No, let me keep it only all to-day; and to-morrow I'll take it out myself, and bid it fly away home, as poor mamma so often told me."

"But suppose it should please to fly away to-day, how can my little Rachel help it?"

“Oh, I’ll put it in a box, and give it nice green leaves, as many as it can eat, and——”

Poor Rachel’s voice was not strong enough to complete the list of luxuries she would have promised her prisoner in lieu of liberty ; but, as if already bribed to quietude, the insect, which had hitherto been describing circles round the rose, stood still near its centre. Delighted to find his little nurseling well enough (for the first time in four days) to notice and seem amused by any thing, the father separated the white rose from the other flowers, and placing it on a table at the foot of the bed, inverted a tumbler over it.

“There, sweet one,” said he, “your Lady-bird is safe.” The child was satisfied, and went to sleep again, thinking of her pleasure in letting it fly to-morrow.

When that morrow came, no daylight was allowed to penetrate through the darkened window of the chamber where the Lady-bird still occupied its crystal prison, for the little child who was to have bid it fly—her innocent spirit had taken its own flight home—was beholding the face of her Father in heaven, while he who had been her father on earth was kissing the pale lips through which that spirit had departed—besieging, as it were, in bitter bereavement, the doors of that clay prison-house from whence the captive was just set free.

* * * * *

The funeral was over: the chief—the only mourner stood

in the unwelcome daylight just admitted, beside the bed on which he had seen depart successively, the two who had made life dear:—he stood alone in the room—alone in the hard mocking world. On the table—under the glass—just where it had been placed to please the innocent eyes which would never again reward with a smile his labours of love—lay the white rose he had gathered on the morning before his little one died. For lack of water the flower had withered even before her cheek was cold, and now the lapse of a week had turned it brown and shrivelled. But though there was no life within the rose, there was life about it—near it. The captive Lady-bird still survived; and as if shrinking from contact with the vegetable death, was traversing uneasily the sides of the tumbler.

The mourner's eye followed the motions of the insect. It was something living to look at when all else to him seemed dead. It was the last object, except himself, on which his little Rachel had smiled,—perhaps the last save himself, on which her thoughts had wandered.

Remember the Bastille prisoner and his spider; Silvio Pellico with his.—Their hearts could cling even to a loathsome object, because they were alone—shut out from communion with human life and human love; yet they, in the world beyond their prison walls, had other lives bound up with theirs—other hearts with which theirs, at least in fancy, could hold fond intercourse, and hope to meet again on earth.

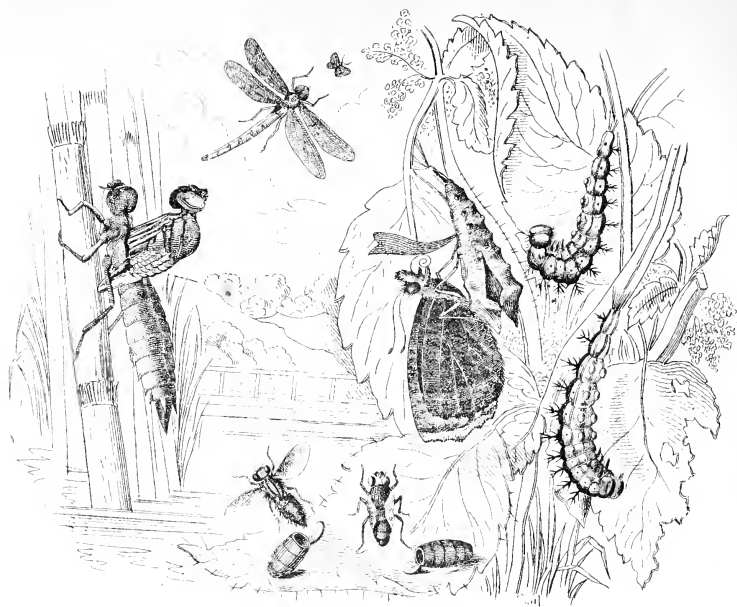
The bereaved father was more alone than they. Care, and poverty, and scorn, anxiety and grief, had made him weak in body and in mind, perhaps childish—perhaps doating in his desolation. He kept the dead rose, and he also kept the living Lady-bird—watched it—tended it—even till he loved and missed it, when it too died.

* * * * *

And this was the reason why our old gentleman, who at Providence Cottage had no garden, kept in a glass case white roses and red Lady-birds.



"No doubt, Sir, an Entomologist?"



COMING OUT.

Look at this beautiful world, and read the truth
In her fair page; see every season brings
New change to her of everlasting youth—
Still the green soil, with joyous living things
Swarms—the wide air is full of joyous wings.—*Bryant.*

OLD MAY DAY.—Now is May arrived in earnest—the real flowering May of the Old Style and the old Poets; when kings and queens were “wont to come out,” and meet, as they went a Maying, all the more glorious things “come out” too, and “coming out” still, bright and beautiful as ever, now that of all these royal personages even the old bones are crumbled into dust.

“Coming out!” what a multitude of pleasant notions are associated with this expression—the very motto for the season, now inscribed in living characters on the unfolding scroll of nature. Who can want an exhortation to “come out” and read it?

Not the flaxen-headed village children, who “coming out” of school, hie shouting to the wood and meadow, where they spell it (each after his fashion) with a merry laugh.

Not the captives set free,—be it from durance, from disease, or labour. These from the dark-barred prison—from the close sick chamber,—from the foetid factory “coming out” themselves, all read the bright inscription in the glorious sunshine—in the free fresh air,—in the opening flowers:—read it with eyes that glisten, and hearts that, if not crushed entirely, expand with gratitude and joy.

And can there be of others—of all that are free to do it—one who needs not the kind persuasion of nature to “come out?” Yes, more than can be numbered of such as sunk deep in selfishness and sensual pleasure, and, loving the things of darkness, care not to look upon the things of light, now “coming out” daily, under the influence of the summer sun.

And other “comings out” are in progress, which, as compared with these, are cold, conventional and artificial—yet not without a something, in their way, of seasonable light and gaiety and promise. Of such are the “coming out” of new

books—of new actors—of fair new flowers, not of the garden or the wild, but of the world,

“With eyes
That mock the hazel-nut and shame the violet.”

Last, not least, in eyes like these, are the fashions, “coming out” for summer “with the butterflies,” a phrase which brings us back to the sweet natural, and gives occasion to look more closely than our wont into some of those expansive processes by which the youthful flutterers of summer are “finished” for their “coming out” in the gay assemblies of the insect world.

Now day by day do the garlands which adorn their verdant ball-rooms grow thicker with opening flowers, and together with these, and, emerging in numbers nicely proportioned, do

“Throngs of insects in the shade
Try their thin wings, and dance in the warm beams
That waked them into life.”

We are thus reminded, at every step, that flower, leaf, and insect, were intended for each other; a fact already noticed, together with various other analogies between their respective “comings out.”

It is no easy matter, watch it as we may, to see a flower in the act of blowing—bursting forth from the confining calyx; nor is it much less difficult (out of doors) to catch an insect in the act of emergence from the trammels of its chrysalis estate. It needs, however, but small pains and patience,

which will be well rewarded, to become witnesses, within doors, of the latter operation. This with a variety of insects is equally curious and interesting, though most conspicuous and easy of observation with the tribe of Butterflies and Moths.

Numerous Cabbage Butterflies, both of the larger and smaller species, have "come out" already, and are now upon the wing; but as of these there are various successive broods, there are almost as many still enwrapped in the skins of their angular chrysalides, and hung pendent, horizontally, in their chosen places of security,—such as under the copings and ledges of garden walls and palings.* We have only to lay gentle hands on a few of these seeming sleepers, and carefully detaching with a knife their silken buttons of suspension, to stick them by the same, with a thread girth round the body, to the upper edge of a deep-sided box; then placing this beside us on the table, we shall hardly fail by an occasional glance to have our curiosity gratified in their emergence under our own eyes.

We must remember that, like the embryo of a plant in the seed, or the rudiments of a leaf or flower in the bud, the various parts of the butterfly have been pre-existent even in the caterpillar; and when these are arrived at their full maturity within their chrysalis cover, then approaches the crisis of emergence. At this period there takes place a violent agitation in the fluids of the insect,† by which they

* Vignette to "Life in Death," vol. i.

† Insect Transformations, p. 136.

are driven from the internal vessels into all the tubes and nervures of the wings, which being at the same time filled with air from the wind-pipe, increase considerably in size. This, added to the restless motion of the legs, soon enables the imprisoned creature to burst its enshrouding skin, which, flying open at the back, discloses the head and shoulder of the butterfly. Being then soon released entirely, it stands for awhile, motionless, on the broken fragments of its late prison—its wings damp and drooping, small and crumpled; but distended by the fresh supply of air, inhaled through the spiracles, they expand so rapidly, that in the space of a few minutes their dimensions are increased *five-fold*!

Nothing can be more curious and interesting than to watch this marvellous expansion; and, as the crumpled membrane of the wing grows smooth, to discern, emerging slowly from a chaos of mingled hues, all the clearness of pattern and brilliancy of colour which bespeak it finished. As we gaze with admiration on this process of perfection, we seem to have gained admission for the moment into one of nature's studios, and to be tracing the progress of her unrivalled pencil, while employed (under the guidance of her Divine Master) on the last touches of what have been justly considered as her favourite miniatures. In half an hour the pictured pinions are complete.

Directly after emergence, the wings are thick, and capable of great extension by stretching, but not so after full ex-

pansion; neither do butterflies or other winged insects ever grow, when they have once attained their perfect form.

Besides that of the common White, or Cabbage,* the coming out of the small Tortoise-shell Butterfly,† may also now or early in June be easily observed. The gilded chrysalides of this also common but very beautiful insect, are now, and again in August, to be found almost everywhere, suspended head downwards, either to the stalks of nettles whereon their caterpillars have subsisted, or upon adjacent walls and palings. By detaching carefully, then re-suspending them in their natural position, we shall be able to observe, at home and at leisure, the exclusion of their richly coloured pinions from the gilded cases which look not unworthy to enclose them. Or if we choose to follow them through their two-fold transformations, thereby procuring to ourselves a two-fold pleasure, it is now easy to collect and keep some half dozen of the caterpillars themselves, of which the younger broods are still feeding in company on the nettle. They are black and green, black-headed, and spiny coated.

Our plan for observing them has been this:—We place our Caterpillars upon a few fresh-gathered nettle-tops, stuck in a flower-pot of moist earth, tying over our prisoners, to prevent their roaming, a piece of thin gauze or muslin. If, as is now most likely, they are nearly arrived at full growth, we shall not have had for many days the trouble of supplying them.

* *Pontia brassica*, &c.

† *Vanessa urtica*.

with fresh food, before one, at least, of the company of feeders desists from eating, and having first woven a suspending loop or button, thereby hangs himself head downwards to a nettle-stalk.* In this position, he succeeds after infinite trouble,—testified by violent twistings, jerks and contortions—to rend on the shoulders his spiny skin from whence he emerges a chrysalis, perfect at all points; though he requires most usually a few hours' exposure to air, to endue him with the streaks and specks of mimic gold, which mingle with his variegated hues of black and green. This now legless, mummy-like animal must surely fall, as you would fancy, prone to earth; but not a bit of it—his tail is furnished with a hook—his silken loop remains uninjured, and he knows a trick which will make these together available for his support; in short, he contrives, somehow (partly by help of his cast-off caterpillar coat, still pendent by his side) to hitch and wriggle himself exactly into his former place, and hang, a chrysalis, hooked into the same suspending button which upheld, in the hour of change and peril, his caterpillar form. That such important epochs in insect life are not unattended with danger we have had ocular demonstration, in watching their arrival. The suspended caterpillar sometimes dies, seemingly for lack of power to cast off his skin—and we saw, in one instance, that of a chrysalis just emerging, rent asunder by its violent efforts in the same operation. After two or three weeks of

* Vignette.

inanimate suspension, our little Tortoise-shell comes out finally, a Butterfly complete.

The "coming out" of Moths bears a general resemblance to that of Butterflies, only that owing to the chrysalides of the former being usually enveloped in a cocoon, or outer covering, they have not only to burst from their aurelian skin, but also to effect their egress through a barrier, sometimes of silk only, but often fortified by much harder material. The moth of the Silk-worm, enveloped in her thick woven ball, is supposed to facilitate her escape by a dissolving acid, an agent said to be employed also by the Puss-Moth in breaking through—not a mere silken web, however strongly wrought—but the wall of a cell composed of woody fragments, silk, and gluten, cemented by the latter into almost stone-like hardness. The Caterpillar of the Great Goat-Moth (or *Cossus*),* a dweller within the interior of oaks and willows, on the wood of which it is a feeder, constructs itself a compact cell or case, of materials nearly similar to those employed by the Puss†—namely wood, reduced partly by decay, partly by its own jaws, to the resemblance of saw-dust. With this, bound together by silk, and cemented by glue, it usually composes the exterior of its case, which is lined also by a silken web.

Our exploration of a hollow willow-tree was rewarded at the beginning of last August, by the discovery of such a cell,‡

* Frontispiece.

† Frontispiece.

‡ Vignette to 'Moths as Operatives.'

(an oval, wood-covered cocoon, two inches and a half long), from whence, in a few days, we had the infinite satisfaction of beholding its inhabitant come forth. The first intimation of the approaching event, was a strange shaking of the solid fabric, and presently, by dint, as it would seem, of violent efforts, and the use of its hard bulky head as a battering-ram, against its prison wall, the creature, still clad in chrysalis mail, effected a breach at one end of the oval cell. Be it here noticed that the rings of this Goat-Moth chrysalis are each edged by a fringe of hook-like appendages, and now observe their use. Grappling by these, it is enabled to push its brown shining body half way out of its case, in the aperture of which it remains then firmly fixed. In this position, supported by its wooden walls, comes the crisis of its final change. The glazed back-piece of the aurelian mail bursts asunder at the shoulders and through the rent, slowly advancing, comes out a gigantic brown-winged Moth*—the perfect form of three years' development.

The process of enlargement in beetles, bees, flies, and other insects is no less worthy of observation than the above, though, in most instances, somewhat more difficult to witness. The clear wings of many exhibit instances of expansion no less remarkable than those of Moths and Butterflies, and often, on first emergence, differ as much in shape and colour from what they afterwards become. "If a beetle," says Kirby,

* Frontispiece.

“the elytra, or wing-cases, instead of covering the back, fold over the breast, and their substance, soft, leathery, and whitish, exhibits no traces of the tints (often most splendid) which are to adorn them. If a bee or fly, the whole skin is white and fleshy, quite unlike the coloured hairy crust to which in an hour or two it will turn; and the wings, instead of a thin transparent extended film, are a thick, opaque, wrinkled mass.”

The last emergence of various Dragon-Flies, may, during a great part of summer, be often witnessed, by inspecting the stem of aquatic plants, to which they fix themselves on leaving the water, (where their earlier stages have been passed), and attached to which they are accustomed to leave their pupa skins, after having come out as tenants of the air.* Last summer, whilst awaiting the appearance of the small Tortoise-shell butterflies above mentioned, from several of their chrysalides, we gained an opportunity of observing, not only the coming out of the insects inspected, but that also of others, which in the character of parasites had been surreptitiously introduced. One chrysalis out of five was full of small Ichneumons, while two others contained, each, several of the brown oval pupæ of a species of Fly, nearly resembling the common frequenter of our houses. Of these and the like parasitic invaders—of their modes of getting in, as well as of coming out, more at a future season.

* Vignette.

Let us look, lastly, at the “coming out” of insects with reference to that symbolic history of the soul, of which, as now “arrayed in all their glory” they exhibit the concluding page. And a cheerful history it is;—not always, indeed, so brilliant as at present, but at all times full of promise; for even in seasons when to the eye all but a blank, we know that its many-coloured characters (like those written in invisible ink) are only as it were absorbed, to “come out” again, fresh as ever, under the influence of each summer sun. Now, after the return of at least six thousand years, it is as free from mildew, and should, surely (to our perceptions) be more free from mist, than when first spread open; yet was it, probably in common with other pages of the universal volume) more clearly deciphered, and much more attentively marked, in ages of antiquity than in our own.

While the book of nature, as a mere natural history (whether relating to insects or other things) was almost, perhaps, a sealed volume, the “coming out” of the butterfly had attracted notice, and been hailed as a symbolic promise that man also was to “come out” in due time, from the darkness of the grave. The same Greek word *PSYCHE* was applied to denote both a *Butterfly* and the human *Soul*; hence (say the learned) the Egyptian fable of Cupid and Psyche, and the reason that in Grecian sculptures Psyche is so often represented as subject to Cupid, either under the form of a butterfly or adorned with the wings of that most glorious of insect flutterers.

A similar coincidence of names between the emblematic insect and the immortal principle has been observed to exist in modern times.* In the north and west of England the moths which fly into the candles are called *Saules*, perhaps from the old notion that the souls of the dead fly about at night in search of light; and perhaps for the same reason the common people in Germany call them ghosts (*geistchen*.) When life and immortality were brought to light by the Gospel, the insect type by which, in the midst of Pagan obscurity, they had been dimly shadowed forth, acquired fresh illumination. Employed by the Fathers of the Church, the beautiful symbol of the Butterfly shone on their ponderous pages like a beam of sun-light, falling through a painted window on the gloom of a cloister. So great, indeed, was the value attached to this insect emblem by writers for the Church, in the time of Reaumur, that they absolutely fought for it with that great and good naturalist, because, with his newly acquired light on its natural history, he saw reason to dispute the entire fitness of insect transformation to represent the mystery of human resurrection. And certainly, when it came to be ascertained, by the experiments of Reaumur and others, that a caterpillar is not in fact a simple but a compound animal, containing within it the rudiments of the future butterfly in all its parts, it ceased to be an exact parallel of the usual idea of the resurrection—namely, that of a decayed

* By Kirby, and Spence.

body, recomposed of its elements, and re-united, after a certain interval, to the soul.

But whatever the views taken of the mode in which we shall put on immortality, or however modern science may have impaired the fitness of the insect symbol employed to represent it, there yet remains a very obvious analogy between the stages of insect development, and the progressive states of our own being. The gross and grovelling habits of the Caterpillar, with its repeated *castings of skin* as it advances towards maturity—a maturity which it often fails to reach owing to parasitic enemies (“apt symbols of the vices which prey upon the soul”*)—still serve to parallel completely the work of spiritual regeneration.

Although the butterfly seems to have been the first, if not the only insect noticed by the ancients as representative of the immortal principle, there are a multitude of others which furnish emblems quite as fitting of the soul’s destination to a higher sphere.

The fly, now regaling upon sweets, or buzzing in the summer sun, has come out from a shape, and most likely from a substance, of disgust. The beetle, now careering it through the summer evening sky, has emerged from the form of an unsightly grub, and from a living burial within the earth. And the gnat, now a graceful and agile sporter in the air, has

* Kirby.

issued from perhaps a horse-pond, where it dwelt an hour ago—a miniature monster of the mimic deep.

Thus by plain and pleasant symbols is Nature for ever teaching us—entreating us to come out and sit with her at the feet of her Great Author. Her “tongues in the running brooks” are always tuneful; her “sermons in stones” never rugged; her “good in everything” is always easy of extraction; and her moralities are not adorned merely—but wholly conveyed by picture and parabolic story. The French Fabulist observes with truth, that

“La morale nue apporte de l’ennui,
La conte fait passer le precepte avec lui.”

But though Nature deals with us, her children, on this very principle, we turn a deaf ear to “the voice of the charmer,”—and while the Thousand and One Nights of the far-famed Scherezade are in everybody’s memory, the 365 days of the year, each with its tale within tale of wonders ever new, go round unheeded or unheard.

THE BARON AND THE BUTTERFLY.

A TALE.

“Non v'accorgete voi che noi siamo vermi
Nati a formare l'angelica Forfalla?”

THERE lived, in the feudal times, a bulky baron, who wasted his patrimony and stripped his wretched serfs to feed his appetites. He was like a great caterpillar, turning green leaves into brown skeletons in order to fill his ravenous maw.

Like most great caterpillars, and most great men, he was infested by greedy parasites; yet amongst the members of his household there happened, by a strange accident, to be one honest dependant, who, by a stranger still, was a priest—the baron's chaplain and ghostly adviser. As a mere man, there was, of course, something of the caterpillar's nature about the servant of the Church, as well as about the servant of sensuality; but we know of no caterpillar to which, in outward seeming, the former could be likened, except to one of those dry attenuated insect spectres known as “walking branches.”* As the baron seemed nearly all body, so Father Ambrose seemed nearly all soul, and like a house in progress, discernible through a scaffold, the monk's inner man (in progress also)

* Vignette to ‘Resemblance and Relation.’

appeared as if visible through the thin bony frame which surrounded but hardly seemed to hide it.

The mere sight of him was enough to remind people of their souls; but however this might have been with those about him, it is certain that the Good Father never forgot that he had a soul himself; and, what was more, he thought about the souls of other people, especially about that of his portly patron. He had long, indeed, entertained misgivings on account of that precious jewel,—none the safer for the thickness of the fleshy casket which enclosed it; but great, nevertheless, was his horror on discovering, one day, perhaps by the probings of the confessional, that the treasure committed (as he believed) to his own careful keeping, as well as its possessor's own heedless charge, had been actually stolen by the arch-thief of souls,—in other words, that the baron, though a Catholic in all outward observances was (in those days a thing wonderful as horrible) an unbeliever.

Piercing swords from the word,—leadén bullets from the Fathers,—threatened thunder-bolts from Rome,—all were at the holy man's disposal, and boldly and zealously (although in secret) did he ply these sacred weapons for the ejection of his patron's spiritual foes; but they still kept fast possession of the baron's soul; and the baron (as well he might) swore that he had not a soul to keep.

But Providence appoints its own means as well as its own times and seasons. There are certain shrouds of the Cater-

pillar's own weaving, from which the struggles of the self-imprisoned insect, and the assisting hand of the entomologist might combine in vain to free it, till the arrival of an appointed hour, and then a single drop of acid, the gift of nature, bestows freedom on the imprisoned Moth.

The baron fell sick: his mountain of flesh heaved with the volcanic throes of his fiery and troubled spirit. Now, good Father Ambrose, now is thy time—now if ever—to aid in the rescue of thy patron from the power of the enemy. Well he knows it, and there he stands beside the baron's bed, which fever of body, fever of mind, and fever heat (for it was a sultry August noon) had converted into a sea of molten lava. As the monkish labourer gazed upon the huge dismasted vessel, which lay tossing on its waves, hopeless almost of saving its perilled cargo, his forehead streamed with perspiration, and drops hung from the thick black fringe of his tonsure. After depicting the terrors of judgment, he was now in milder mood, dilating on the joys of heaven; but what to the eyes of the blind are the most glowing colours of the painter?

“Talk not to me, father!—If there were a heaven such as your idle words describe it, St. Boniface defend me,” (the baron, though he scoffed at God and the Devil, was always calling on his patron saint)—“St. Boniface defend me from such a place! No horse—no hound—no hawk—no venison pasty—no garnished boar's head—no Rhenish wine.—Call ye this heaven?—To sit upon a cloud, and sing *Aves*, like a

beardless chorister!—A heaven for a *man*! By my spurs, it were a fitter for yonder Butterfly.”

“Stay, my good lord,” said the monk, eagerly catching his patron’s hand in one of his own, while he pointed with the other to the large White Butterfly, which had just entered the window; “you talk, my lord, of that Butterfly—in scorn; but know that the Butterfly is heaven’s own emblem of the immortal soul!”

If the baron had been standing he would have turned upon his mailed heel with a pshaw! As it was, he turned upon his bed with a groan. He knew as much about emblems as he knew about the philosopher’s stone. The monk also turned away despairingly; for his alchemy seemed vain to extract one drop of penitence (life’s true elixir) from his patron’s stony heart. So, at least, it then appeared; but Father Ambrose, however unsuitable his tools, or unskilled his mode of handling them, had been working in the zeal of real piety, and therefore had not worked alone.

The baron awoke next morning with calmer pulse, and in calmer mood than usual. The leech exulted in the success of his remedies, and as he retired from his morning visit pressed the rushes on the floor of the chamber with audible tread. The Physician of souls also welcomed the patient’s clearer brow and softened tone; but, more modest than his brother in the art of healing, took no credit to himself for the smoothing of the troubled waters; and fearing the calm would prove

but transient, forbore to ruffle it by the renewed breathing of his ardent spirit. He therefore stood beside the bed in silence, watching and ministering, even with woman's tenderness to the sick man's wants.

"Ambrose," said the baron, as he took from his hand some cooling drink, "I have been dreaming something—I hardly know what, of that Butterfly heaven of yours; only I just remember that I saw there (in sooth it was a foolish fancy) my brother Hubert."

"And wherefore not, my lord? Thy brother Hubert was a good gentleman—and, God rest his soul! a pious christian, —also, a noble benefactor to our ancient house."

"Aye! father, but he loved a venison pasty, and a stoup of good Rhenish almost as well as—his sinful brother."

"True; but these creature comforts, and other carnal lusts, were not the gods of his idolatry, as——"

"They have been of mine, good Ambrose, you would say; but they are broken—broken—now, and so is their worshipper. ——Do you know, Ambrose, I would give—but, fool that I am! what have I left to give—to have been another man?"

"My dear patron! my brother in Christ!" exclaimed the monk, falling on his knees, and grasping the baron's hand in ecstasy, "be then no longer what you are——But what say I? the spirit's influence has already begun—and *you*, while it is time, must work with it to complete a change."

"The time is past; or, if I had years instead of hours, did

you not once tell me—no, I learnt it from my mother when I was a little child—that the ‘leopard could not change his spots, nor the Ethiop his skin.’”

“Aye! but I also told you yesterday that the Butterfly is an emblem—an image of the soul—*your* soul. The Butterfly was once a crawling greedy caterpillar—his world the heart of a cabbage.”

* * * * *

“The devil fell sick, the devil a monk would be;
The devil got well—the devil a monk was he.”

The baron got well; but his penitence did not exactly evaporate in a whiff of brimstone, as is here recorded concerning that of his late master. The genial drops of remorse which the saving angel of sickness, assisted by Father Ambrose, had infused into his heart, still worked and fomented there; and he *thought*, at least, about many things which had never before entered his mind. Amongst other mementos of his sickness unto death, he remembered something about the metaphor of the Butterfly; and when he first tottered abroad, an altered man (at least in outward seeming), he could hardly do otherwise than recollect it; for it was in the month of May when the White Cabbage Butterflies were again flying in all directions, as he had seen them, from his bed, in August.

One day, while leaning, in his walk, on the arm of Ambrose, a thought—a clever one as he believed it—entered the convalescent’s head.

“Father,” said he, “what would have become of all these flying creatures, if when, as you tell me, they were crawling caterpillars, they had not ate their fill? Methinks their bravery would have been finely clipped. See, some of them are bigger than the others,—those, I warrant, who had a place nearest to the cabbage heart. If your comparison held good, the more a man indulged his carnal appetites, the better angel he would make.”

“Satan, avaunt!” inwardly exclaimed the holy man, shocked at the irreverent idea instilled into a yet darkened mind, from, he believed, a darker source. “Saint Dominick, save us!” he presently returned, and somewhat pettishly—“thou speakest as if the carnal man were in reality a caterpillar, with no better teaching than his own craving appetites—the immortal spirit really a short-lived Butterfly. Did I not explain how these are only emblems? But, even thus considered, thy objection is but vain. Perhaps thou knowest not (and here my teaching was in fault) that no Butterfly ever yet issued from a caterpillar’s skin—no crawling worm ever yet changed, at once, into a glorious flutterer. The greedy caterpillar must put off, first, his gross and grovelling nature; his sensual delights of cabbage or of nettle must become to him as nothing.

“Look here,” he continued, plucking from off an angle of the castle wall a suspended chrysalis—“look at this seemingly lifeless creature—this aurelia, shut up in its gilded skin, and

shut out from the creeping and flying things around it. You deem it dead; but its energies are now in fullest action,—its various parts are maturing, and it will soon join its winged brethren in the sky. See here an image of the retirement of the sensualist—the sinner—within himself, and from the world. See in this creature's gilded coat of mail, the 'whole armour of righteousness,' which he, who would win heaven, must put on."

* * * * *

A few years saw the burly baron converted into a reverend brother of the same order, and an inmate of the same monastery, as Father Ambrose. Whether the baron's caterpillar soul ever emerged from its chrysalidan armour—the monastic habit—an angelic butterfly,—only He can tell who gave the immortal spirit, and created its fugacious emblem.



"See, Heaven's own emblem of the Soul."



THINGS OF A DAY.

“ Dans leur lueur de temps, dans leur goutte d'espace,
Ils ont leurs jours, leurs nuits, leurs destins, et leur place.”

“ Thy day without a cloud hath passed,
And thou wert lovely to the last,
Extinguished—not decayed ;
As stars that shoot along the sky
Shine brightest as they fall from high.”

WE bought, towards the end of last November, a round dozen of cotton hose, which (in our old-fashioned simplicity, judging of things as they are by things as they were,) we had fully expected to do their duty, in all integrity, for a term extending certainly much beyond this twentieth day of May.

Yesterday, however, old Martha, the mistress and (eke) the mender, of our wardrobe, announced the astonishing fact that our "stockings were beginning to go."

"Bless us!" we exclaimed; "why it was only in last November that they came."

"True enough, Sir," responded our domestic with a sigh; "there's nothing lasts in our days; but when I was a girl——"

"You were the prettiest in the village, eh! Martha!"

We interrupted, hoping by means of this retrospective compliment to cut short the accustomed comparisons, which were always of opposite quality to our short-lived cotton hose. Our manœuvre was successful; for the compliment itself, having reference, like the yarn it was intended to break, to a remote age, drew at once from out the stores of memory such an intricate mass of tangled threads, that not one could poor Martha single from the mass. She thought no more of stockings, ancient or modern,—so many other things came crowding into head and heart. Confused, partly by these, partly by her old master's gallantry, not a word found utterance, but, with cheeks which glowed like a shrivelled pippin, she dropped a curtsey and withdrew.

We might have cared less to rid ourselves thus speedily of good Martha's not always unwelcome presence: but our mind had been busy, on her entrance, in choosing a subject for this day's lucubration. Her unlooked-for announcement was not sufficiently afflictive to divert our thoughts from the all-perfect

works of nature; but it served to introduce into the same channel a few comparative reflections on the imperfection of those of art.

We are no advocate, through thick and thin, for "the Good Old Times," into which we should be sorry to find ourselves carried back in other than on the wings of Fancy; but, as regards the fragility and unsoundness of most modern works and ways, the judgment of Martha does not, perhaps, greatly err. Few enough, certainly, in these days, are the things made or done with a view to other than a temporary purpose, and for this reason all our doings (sorry bunglers as we are at best) are ten times more imperfect than they need be.

Look at that new street, in suburban London, called Atlas Place. Wanting strength to support their own weight, two of the end houses fell beneath the gales of last March. But what of this? They stood their intended *day*, for they were only built to sell, and were turned into money; they served to "raise the wind" before the wind razed them. In the centre of the row still stands Atlas House, a manufactory of boarding-school misses, from whence they are to be turned out exquisitely polished. The polish, it is true, will lie but on the surface, soon to be rubbed off, instead of heightened, by the wear and tear of life. And who can expect it otherwise, knowing that the neat little articles "finished" at all such establishments are but plated goods, got up only to last their

day, to pass with the unwary for sterling metal, and fetch above their value at the matrimonial mart?

On a line with Atlas House, but with numbers enough between, for protection of its gentility, is a chandler's shop. On the counter lie numerous *échantillons*, enveloped in the letter-press of a modern author,—a clever writer whose pages deserve no better fate. They were written, two years since, only to please the taste of the day, and now that day is over.

In the house adjoining, at a front window——But stay! what have we here, just fallen upon the ledge of our own cottage casement? An Ephemeral or May-fly, one, doubtless, of the early swarm which we noticed at nine o'clock this morning rising and falling near the brook at the bottom of the garden. They were then just risen from the water, new-born into air, and into their perfect stage of being. Now it is scarce noon, yet of this, and of the greater number of its active fellows, the life is over. Literally, as proverbially, this is the creature of a day;—a day! say rather of a few brief hours; but only let us compare it with the works of art or artifice intended by us for a day's duration.

Here all is finish and perfection; for Nature metes not the quality of her workmanship by amount of time. Even amongst the beautiful and short-lived flowers some of the most beautiful of all are of all the briefest;—witness that flower of an hour the *Malva horaria*, the *Favonia*, the *Gum-cistus*, and the *Night-blowing Cereus*.

But now examine more minutely our cloud-dropt insect specimen,

“Extinguished—not decayed.”*

Look at these four unequal wings, with nervures so delicately reticulate, resembling the finest lace, the meshes filled by yellowish glassy membrane, and “freaked” with dark brown spots or squares. On the narrow chest, and long and flexible body, the same colours are harmoniously disposed in spots and rings, and even the three slender filaments which form the tail are ringed, *en suite*, with black and yellow, the whole being covered by a natural varnish. How nicely jointed, also, and finely polished are the six tapering legs, of which the two foremost are much longer than the others, forming, when placed together and stretched forward, a sort of counterpoise in flight to the filaments of the tail. Besides the large compound eyes, which occupy a great portion of the head, we can just discern without a magnifier (and clearly with one) three shining spots disposed in a triangle close behind them. These are the ocelli or simple eyes, common to most other perfect insects.

And all this external beauty, with internal organism yet more admirable, is intended but for the duration and uses of less than a single day! Fewer organs and far less adornment might seem, in our contracted judgment, to have sufficed for creatures destined during so short a time to employ the former, and to have the latter, in most cases overlooked at least by

* Vignette.

human observers. Occasionally indeed, as we are now doing, we are led to amuse what we call an idle hour by bestowing a little more than our wonted notice on the more fleeting and fragile works of nature; and then, as we admire the elegance of form, the exquisite finish, the curious adaptation of parts, so strikingly if not pre-eminently observable in the flower or the insect of a day, there comes, mingled with our admiration, a feeling somewhat akin to wondering regret that so much pains should have been bestowed on the formation of an object intended to exist but for so short a space. "It's almost a pity! It's scarcely worth the while!"—are phrases which, rising to our lips, are checked only by the monstrous unfitness of applying them to the works of an infinite Being, with whom to will is to create, and to whom a day is as a thousand years,—a thousand years as a day.

To return to our insect of a day, or, to speak with more precision, of from four to five hours, the supposed limit of existence with those amongst the tribe of *Ephemere* permitted to reach a good old age. These, however, form probably but a minor portion of their countless swarms, liable as they are to continual accidents by flood and field: if, indeed, we may regard as accidents those common catastrophes by which, for the benefit of other animals, they are designed to perish. Their dangers and disasters are thus pathetically enumerated by a naturalist of note.* "Who," says he, "hath

* Swammerdam.

so great a genius, or is so conversant in the art of writing, as to be able to describe with a due sense the trouble and misfortunes to which this creature is subject during the short continuance of its flying life. For my part, I confess, I am by no means able to execute the task ; nor do I know whether Nature ever produced a more innocent and simple little creature, which is, nevertheless, destined to undergo so many miseries and horrible changes. An infinite number are destroyed in their birth (that is final transformation) by fish. Clutius acquits no species of fish of this cruelty except perch and pike. On land, when engaged in the work of changing their skins, they are barbarously devoured by swallows and other birds. Escaped this peril, when they approach for a second time the surface of the water to sport and play, they are again likely to fall a prey to fish which drag to the dark bottom and devour them. If, again (instead of skimming, dipping rather near the surface of the water) they take a higher flight, birds often tear them to pieces and devour them. Thus, though most innocent, no wild beast can be pursued with greater cruelty." The conscience of the fly-fisher will suggest another misery more acute, perhaps, and prolonged than either of the above, added by his own hands to the catalogue of the poor May-flies' sad calamities.

On looking, however, a little more closely into the history of our persecuted insect, we shall find that the above, though a picture perfectly true of the apparent ills which Ephemeral flesh

is heir to, is nevertheless only a partial one. It represents the creature's condition merely in the last and brightest stage of its existence, and gives, therefore, both a mistaken notion as to the duration of its entire life, and an unjust one as to its being made up of pains and perils. In the form of a brilliant flutterer sporting on the morning or the evening sunbeam, and also for ever on the brink of danger, it is true that the infancy, middle life, and old age of an Ephemeral Fly are all comprehended in less than the compass of a day ; yet by each one of the myriads which rise, born as it were anew, from their native streamlet, the boon of existence has been possessed, and, without doubt, enjoyed for the space of two previous years.

Maternal instinct, wonderfully guided by Paternal Providence, directs each parent May-fly (heedless sporter as she seems) to drop her eggs into the water while she hovers above its surface. From each of these issues, in due time, a wingless six-legged grub,* which bears no resemblance to the perfect insect, except, perhaps, in the triple appendage of bristles issuing from the tail. This little animal is provided with a set of breathing tubes running along each side of its body, adapted for the extraction of air from water ; also, on each side, eight fins, which by aid of a microscope are clearly discernible. The first care and labour of the larva's life is to excavate for its habitation, within the soft bank of the river, a hole or burrow, proportioned to its size, and below the level of the water, of

* Vignette.

which it is consequently always full. This cavernous abode serves the double purpose of protecting it from the jaws of its finny foes, and of providing it with a ready supply of that slimy earth on which it is supposed chiefly to subsist.* It has however been suggested that the insect may, after all, only derive nutriment from the decaying vegetable matter mixed with the earth thus swallowed; but that if, on the contrary, it really feeds on earth, the fact would at once abolish the distinction laid down by Mirbel between the animal and vegetable kingdoms.

In the above sub-merged, subterranean, sunless and earth-eating existence the streams of life and of its native current glide for four-and-twenty successive moons over the head of our as yet misnamed *Ephemera*, which, during the latter part of the same period, exchanges the first (or *Larva*) for the second (or *Pupa*) state of insect life. It is then that on some fine May morning (or may be evening) it bids adieu for ever to its dark subaqueous dwelling, and rises to the surface, prepared to enter on its third estate.

Having burst from the *Pupa* skin, which is left behind as the badge and bandage of an inferior and confined condition, it quits, in company with numerous fellows, the water for the air, in the shape, to all appearance, of a perfect fly. As if, however, the most fugacious of all insect forms was purposely designed to be also the most elaborately finished, it has still to pass through another and fourth stage of development. The

* See Insect Architecture, p. 206.

singular process by which this additional and final change is effected has been thus described.*

“After its release from the *Puparium*, and making use of its wings for flight often to a considerable distance, the little *Ephemera* fixes itself by its claws in a vertical position to some convenient object, and withdraws every part of the body, even legs and wings, from a thin pellicle which has enclosed them like a glove the fingers, and so exactly do the *exuviae*, which remain attached to the spot where the *Ephemera* has disrobed itself, retain their former figure, that I have more than once at first sight mistaken them for the perfect insect.”

To become eye-witnesses of this interesting operation we have only, on a warm still morn or evening of May or early June, to take our station beside a brook which they are known to haunt, and we shall see them rise from the water, and settling on some adjacent water plant, or perhaps on our own sacred persons, proceed to cast off and leave suspended the outer garment which has hitherto concealed their last and most perfect suit. This, though much resembling it, greatly exceeds the former in polish of texture and clearness of colouring. In *Ephemerae*, caught previous to this final casting off, we have had opportunities of observing it effected in our own window.

When thus adorned in their best and what may properly be called their bridal vestments, love and pleasure (unimpeded even by the exigences of hunger, air being then their only

* By Kirby and Spence.

food) form the brief and brilliant consummation of their lives. Spite of the pathetic enumeration above quoted of ephemeral miseries, what, after all, is less deserving pity than our own merry May-fly, even in its last estate? In happy ignorance of all surrounding perils—sporting one moment on the sunset beam—engulphed the next in dark unconsciousness by skimming swallow or by rising fish—it is through the cruelty of man alone that they are exposed, as they dangle on the line, to a fate really worthy of commiseration. We have only to watch their revels in the air, and instead of “the most wretched” we shall be disposed to call them the most happy of created insects. The dullest and most dispirited of solitary strollers that ever marred by his cold melancholy visage the warm glowing face of a summer’s eve, could hardly behold a translucent cloud of these buoyant creatures, as it comes glittering betwixt himself and the setting sun, without feeling his very heart illumined as though by some scattered sparks struck from this mass of bright existence. Assembled in jocund groups—now sporting high above the tallest willows—now descending to the surface of the meadows or the stream—now sailing like hawks—now rising and falling in undulating motion—their long triple tails disparted, and by turns elevated and depressed with the movement of their lightsome bodies—thus with the ephemeral crowd passes their live-long day, which, unless prematurely ended, terminates at an hour of the day natural, regulated by that of its commencement.

There are various species of *Ephemera*, differing in size and colour but similar in habits and economy. Of these, one kind* is distinguished by having only two tail-like appendages instead of three. But besides these *Ephemera*, properly called May-flies, the same appellation is often given by anglers to another tribe of insects, perfectly distinct, known also as *Caddis* or *Case-flies*, which only resemble the *Ephemera* in passing their early stages under water, and in serving as the staple food of fish and swallows.

The seasons as well as hours of appearance vary with different sorts of *Ephemera*, which are not therefore strictly May-flies. That figured in our plate is a large common species,† which we have noticed late in May, and early in June, sporting in groups of few or many, near the banks of the New River at Hornsey. Its most usual hours of appearance have been from seven till eleven in the morning, and from about sunset until dusk. We may here observe, that confinement, instead of abridging, would seem sometimes to prolong the existence of this short-lived creature; for of some of the above species put into a box, at night, several were found living in the morning.

Some of these insects appear in England even as late as August: and Rennie speaks of having noticed them on the Rhine in the same month of 1829,—when appearing in the evening all were dead before sunrise. He describes them as “so thickly strewn in the great square at Wiesbaden, that it

* Baetes.

† *Ephemera vulgata*.

seemed as if a shower of snow had fallen in the night, their wings being white, and about the size of a broad snow-flake.”*

The remarkable brevity of the Ephemera's life seems to have attracted the notice of the ancients, Aristotle speaking of little animals on the river Hyparis which live but for a day :—those (he observes) among them which die at eight in the morning die in their youth ; those which live to see five in the afternoon, in their old age.

With one more application to ourselves let us now review the history, as, in the beginning, we examined the structure of our little Day-fly : for in the former, no less than in the latter, is contained a lesson written in characters Divine. What precious time, made up of stray minutes and odd half hours, do we not daily throw away, because “it is not worth while” to employ them? How many useful works do we deem it not “worth while” attempting, because life may probably be too short for their completion! How much of mind do we consider it not “worth while” to cultivate, because hopeless perhaps of living to reap the fruits of our mental labour, forgetting—creatures of a day, as we strive to make ourselves—that we are sowing not for time, but for Eternity! In all these things an Ephemeral Fly may teach us wisdom. Although a few summer hours constitute his all of life, not a moment of those hours is thrown away :—with him all is ceaseless activity and consequent enjoyment ; and, early as he dies, it is not until he has performed the purpose of his creation.

* Insect Transformations, p. 316.

True—but then (say we) he is only a creature of instinct. Suppose he were endowed with understanding, and a knowledge of his own frail nature; then perhaps, being aware that his existence was so very brief, he might, on rising perfect from his native streamlet, let himself drop back again and be drowned, because to enjoy life till sunset would not be “worth his while.”—Would our May-fly be, in this case, veritably a creature of reason? We trow not, or his reason would be, at best, but the reasoning of the day.

TO THE MAY-FLY.

Winged reveller of the glowing eve,
Born on the sunset beam to weave
Thy evolutions airy;
One in a maze of living gems,
Bright as in fairy diadems,
Thyself a dancing fairy!

Thou and thy little comrades gay
Now clustering thick as flowers of May,
Yon hawthorn bush adorning;
Will, like those blooms (but earlier) shed,
Find on the earth a dewy bed,
Ere next awakes the Morning.

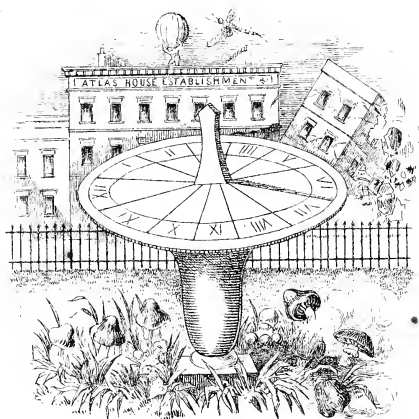
Thy joyous gambols as I see,
May-fly, I'd almost wish to be
Such thing of brief duration,
To sport, like thee, one little day,
Nor pass through years of slow decay,
To reach life's termination.

But ah! what graceless wish breathed I?
How little knowledge, brilliant Fly,
Of thy existence shewing:
Still less of that I call my own,
How heedless of the precious boon,
And Him to whom 'tis owing!

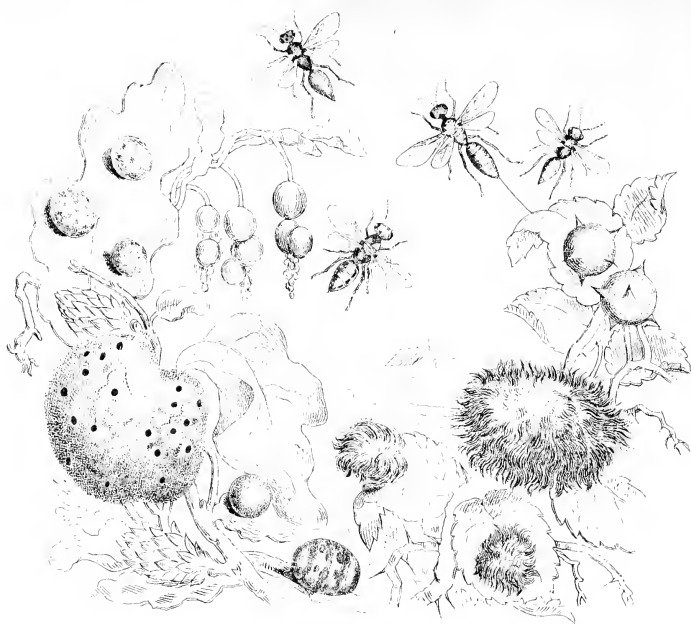
Bright insect, ere thy filmy wing,
Expanding on the breath of spring,
Quivered with brief enjoyment;
'Tis thine for years immured to dwell
Within a lone and gloomy cell,
To eat,—thy sole employment.

Within that cavern dark and dank,
Scooped in a streamlet's oozy bank,
Its walls the water laving,
Thy form and nature incomplete,
Earth was thy home, and earth thy meat,
So coarse and vile thy craving.

To these long years, thy life's dark part,
How much within my earth-bound heart,
 Too close resemblance holding!
But light and joy, for one day thine,
From age to age may yet be mine,
 Their endless beams unfolding.



"These stand their purposed day."



INSECT MAGICIANS.

Lo ! at their Fairy touch at once springs forth
A magic growth of seeming fruits and flowers,
Fair to the eye, and animate within
By more than vegetative life.

THE day approaches on which oak-apples, bearing their gilded honours, will perpetuate the memory of those their ancestral fruits, which hung, in company with a hunted monarch, on the tree of Boscobel. Whether dressed in tinsel, or adorned by Nature's painting, these apples of royalty are pretty things to look at; and against the coming anniversary (the 29th of May), which will bring them within the reach of all, it may

be worth inquiring whether they have aught within deserving notice; or whether, as with the merry monarch's self, they are to be estimated only for their outward bravery.

Pleasant to the taste these fair fruits are not (as well we know by bitter experiences of childhood); so not daring to bite, let us pull one of them asunder, or, dividing it with a knife, reveal its secrets. We now see, surrounded and bounded by spongy pulp, a set of cells, each with its solitary living occupant, for whose safe keeping, and that of his fellows, this fruit-like tenement was called into existence, not by the labours of a trifling artificer, but by the touch of a flying fairy. The insect tenants of these pulpy palaces are not unlike, in one condition of their being, to the scions of royal houses. It is not improbable that before one of them has attained to the majority of its winged estate, all may be despoiled of their inheritance by a host of usurping parasites, such as, in palaces reared by hands, have often enacted a resembling part.

The above description of a common oak-apple, its Gall-fly occupant, and Ichneumon intruder, may seem over-fanciful; but in writing of Galls, our pen may possibly be carried from the dry land of simple fact by some spirit of fiction in our ink,—an infusion, it is likely, of gall-nuts, the produce of the East, the very region of romance. With graver pens than ours, Fancies would seem, indeed, to have been the very growth of Gall; for, descanting on their origin, an Italian entomologist,*

* Redi.

an observant naturalist,—one who waged war, moreover, with Popular Fallacies,—imagined that Oak-apples and other Galls were animated, nay, brought into being by a soul—not an animal but a vegetative and sensitive soul—in the plant itself. To account for the mysterious entrance of life into the centre of an imperforate ball, he might just as well have adopted, and slightly modified to suit his purpose, the no less imaginative notion of some learned Jewish Rabbins, who believed, or, not believing, taught that human souls transmigrate after death into leaves and buds. “For certain crimes,” they would have it, “a soul goes into the leaf of a tree; the wind then rises, and shaking it about causes great torment. This punishment ceases when the leaf falls to the ground: though sometimes, indeed, such a soul passes from leaf to leaf through several.”

Before we throw these learned bubbles entirely away, suppose we, in sport, toss up the last of them, just to make with it another random hit at the origin of life in the oak-apple. Let us fancy, with the sagacious Rabbins, an erring soul incarcerate within a single leaf, or wandering from one green prison to another. A portion of its guilt thus expiated, we may imagine it in remittance of punishment, and, as a first step towards restoration, permitted to throw aside its more vegetable skin, and to put on an animal form (albeit one of the very lowest) as the grub, or even egg of a gall-nut insect. Under a transition so important as the recovery of an animal shape, however insignificant, could a poor soul do other-

wise than cause a most irregular disturbance amongst the contiguous vegetable juices, which, forthwith beginning to ferment, and rise, and consolidate around it, soon constitute again its vegetable prison,—a prison of no larger dimensions than the narrow circle of an oak-apple, or a currant leaf-gall?

To follow up the above notable ideas, the peculiar tree of England, her mighty oak, were certainly no unfitting instrument for the punishment of England's erring potentates. Only fancy, amongst others, the roistering spirit of the "merry monarch" to have been condemned, in expiation of its innumerable naughtinesses, to wander, for nigh two hundred summers, from leaf to leaf of the self-same tree, or a tree of the same sort as that whereon he hung—a fugitive. Or supposing him by this time permitted to exchange for an animal the vegetable form,—think only of this animal king condemned to play the insect in the oak-apple; and perhaps on this oak-apple day of 1849, mounted in his gilded prison on the beaver of a round-hat royalist! Then (oh, most crowning consummation of a royal retribution!) the gilded apple withers, and as the juices perish on which its occupant regaled, the spirit of the Stewart, whose very God was appetite, pines on starvation, dies as much as spirit can, and revives only to animate another oak-apple, and tread again the same tiny round of painted or gilded penance.

But a truce with fancy, and now for fact; or perhaps we should say rather for the probable instead of improbable con-

jectures to which the extraordinary birth of oak-galls, and galls in general, have given rise. One thing is clearly ascertained, namely, that their originator is none other than an insect,—the winged parent of the wingless grub, or *Larva*, which begins life within them; but *how* the slight puncture made by the mother fly upon a leaf, or stem, or bud, can produce, and that often in a few hours, the extraneous vegetable products which arise for its protection around the inserted egg, is still no little of a marvel and a mystery. The common oak-apple (as becomes instantly apparent on cutting one across) contains within its pulpy substance numerous oval cells, each enclosing a small grub, which in due season,—June usually, or July,—will issue forth a little four-winged insect, the image of its mother Gall-fly.* Such, at least, is the result, when the legitimate possessors of the apple are allowed to reach maturity; but, in spite of the protecting bulwark which Nature has thrown up around them, a parasitic invader, a brilliant fly of the usurping family *Ichneumon*,† often detects the hapless dwellers in the apple, pierces with an instrument adapted for the purpose through the fleshy pulp, and depositing an egg within each of the Gall-fly's grubs, leaves them a prey to the cravings of her own. The latter, when arrived at maturity, emerge a set of winged impostors, which, besides having taken the lives and usurped the dwellings of the Gall-fly brood, have sometimes also, through error of observers, robbed them even of their name.

* Vignette.

† Vignette.

Besides the oak-apple, many other varieties of Gall (each the produce of a distinct species of *Cynips*) are found on the same tree. One of these is now common on the leaves. They are either single or in groups; are about the size of a currant, green, tinged with red, and serve each as a protecting globe to a single egg, or grub, which occupies a central cavity, surrounded by the juicy substance of the fruit. These berry-like productions are sometimes seen attached also to the oak catkins, pendant on which they are not unlike a half-plucked bunch of currants, from their resemblance to which they have been named Currant Galls.* Others, widely differing from the above in appearance, but of similar origin, are also very abundant on the oak, near the extremity of its branches. These, from their form, and the arrangements of the small leaflets which compose them, have been named after the artichoke, which they most resemble.†

Not only the most extreme and tender branches, but the rugged bark, the solid wood, the root even of the giant oak, is ready, at the touch of her wand-like piercers, to supply the fairy Gall-fly with those rapid and extraneous growths, which serve to protect her tender offspring. Most of these bark and root-galls have the appearance of brown, woody, irregular excrescences; but there are some which form a beautiful and striking contrast with the coarse substances from which they spring. An exceedingly pretty if not uncommon specimen of the latter description we found in July, amongst some oak

* Vignette.

† Vignette.

underwood near Hornsey. These singular Galls, resembling in form the buds of a flower, (those especially of the *Mezereon*) sprung in thick clusters from the brown rooty stems just above and below the surface of the ground; and when first gathered were of a delicate wax-like white, shaded, and striated by the most brilliant rose colour. A single grub was ensconced in the centre of each bud-like Gall; but, owing to the piece of root having been carelessly mislaid, we lost the opportunity of seeing the perfect fly.

Several other of these curious productions of animal origin, but vegetable growth, have been found upon the English oak; but it is to the oaks of other lands, those chiefly of Asia Minor, that we are indebted for the Galls, which, exported from Smyrna and Aleppo, make a prime ingredient of our ink. Such as may be curious to look upon one of those fairy-like Oriental flies, whose tiny wands have assisted to feed their pens, perhaps also their purses and their pride, have only to buy and bruise some half dozen of the best blue galls, in one or more of which the perfect insect is almost certain to be found imbedded.

Various are the other trees, shrubs, and herbaceous plants which produce each their peculiar galls. As the towering oak is not too lofty, neither is the trailing ground-ivy* too lowly, to escape the impost levied on its juices for the protection and support of Gall-fly infancy, which is also cradled on the

* The gall of the ground ivy is produced by a Gall-gnat.

branches of poplar, willow, rose, and broom. Very commonly met with on the leaves of the hedge-rose, in July and August, is a berry-shaped gall nearly resembling the currant-gall of the oak. Like that, it is coloured much like an apple, usually advancing with age from paly-green to rosy and mellow red; but instead of being always smooth, this miniature and mimic fruit often displays a sprinkling of short sharp thorns indicative of the character of its fostering, if not parent, stem.* Besides the above, the dog-rose is accustomed to display one of the most conspicuous and perhaps the very prettiest of all Gall-fly productions. This, which is often called the rose *Bedeguar*, wears the appearance of a mossy tuft, varying greatly in size and in colour from green to brilliant red.† In some parts of England it is said to be known by the name of Robin's Pin-cushion (we suppose Robin Good-fellow's)—a term which would serve to designate its fairy-like formation. The creative piercer of the fairy insect is, on this occasion, usually applied to a branch, sometimes to the main stalk of a leaf. The plant obeys, as usual, the behest of the parent fly, and speedily puts forth its energies to cover the group of eggs committed to its care; but, instead of surrounding them by a fruit-like globule, it produces, for their protection, a fibrous spiny mass, shooting in clusters from the several cells which include, each, its life in embryo. It is justly observed, by Mr. Rennie, that "the prospective wisdom of this curious structure is

* Vignette.

† Vignette.

admirable. The Bedeguar grubs live in their cells through the winter, and, as their domicile is usually on one of the highest branches, it must be exposed to every severity of the weather. But the close non-conducting warm mossy collection of bristles, with which it is surrounded, forms, for the soft tender grubs, a snug protection against the winter's cold; till, through the influence of the warmth of the succeeding summer, they undergo the final change into the winged state, preparatory to which they eat their way with their sharp mandibles through the walls of the little cells, which are then so hard as to be cut with difficulty by a knife."*

The rightful possessors of this comfortable moss-covered hybernaculum are four-winged flies of no extraordinary beauty;† but among the usurpers, which frequently deprive them in infancy of life and lodging, are some splendid ichneumon parasites,‡ which have been pronounced unrivalled for elegance of form and brilliancy of colour. Their bodies, resplendent with metallic hues,—gold and purple, green and blue, and their wings (also four) with iridescent lustre,—these insect gems, which want nothing but size to dazzle the admiring eye, are beautiful objects for the microscope, and are easily procurable by keeping some of the rose Bedeguars, gathered in autumn or in spring, until about June; when, if placed under a glass, the egress of their occupants, whether legitimate or surreptitious, may be conveniently observed.

* Insect Architecture.

† Vignette.

‡ Vignette.

We must notice yet another common instance, though one perhaps more beautiful than all the preceding, wherein, at the Gall-fly's creative touch, the willow is made to blossom like the rose; so closely to simulate, by extraneous foliage, the floral form and colour, as to deceive the fathers of botany, as well as no doubt many modern observers. One of the former, old Gerarde describes, and gives a figure of the *rose willow*, under the assured belief that all "its blushing honours," or, as he designates them, all its "gallant shew," could be none other than the tree's natural produce; whereas its mimic roses spring forth in reality at insect instigation, much in the same way as the moss-like tufts of the Bedeguar; only that, instead of spines, the willow shoots into leaflets resembling in colour and arrangement the petals of a rose. The change of hue from green to red has been attributed to an acid in the animal juice infused with the intruded egg.

Besides the Gall-fly, properly so called, there are several other insects which cause by their punctures a variety of vegetable excrescences somewhat resembling those described. Amongst these are the thistle-fly,* gall-gnat,† a few minute beetles, and several sorts of *Aphides*.

As works of wonder, all the comparatively great effects which arise from these tiny causes are worthy of description, as well as notice; but they are too large and too varied for the little limits of our page. It remains, moreover, to complete our

* *Tephritis Cardui*.

† *Cecidomyia*.

outline sketch of Insect Magicians by one or two of the most plausible conjectures, as to the manner in which their natural miracles are wrought through the prick of a needle, fit only for the fingers of Queen Mab.

The *Ovipositor*, or egg-inserting piercer, of the mother Gall-fly, is, in some instances, conspicuously long; in others, only partially visible, except on pressure, when it appears issuing from a sheath, in form of a small curved needle longer than the insect's body, wherein it is, however, rolled up by a curious internal apparatus. It is supposed, by Mr. Rennie,* that "after the Gall-fly has made a puncture with this instrument, and pushed her egg into the hole, she covers it over with some adhesive gluten; or that the egg itself, as is usual among moths, &c., may be thus coated over. In either of these cases the gluten will prevent the sap that flows through the puncture from being scattered over the leaf, and wasted; and the sap, being thus confined to the space occupied by the eggs, will expand and force outwards the pellicle of gluten that confines it; till, becoming thickened by evaporation and exposure to air, it at length shuts up the puncture, stops the further escape of the sap, and the process is completed." The above explanation is, however, only given as conjectural, and the one generally adopted by French naturalists is, that the gall tubercle is caused by irritation, in the same way as an inflamed tumor in an animal body.

* Insect Architecture, p. 371-3.

We have seen now that Galls, though common things, are things produced in no common way, and things involved still in a certain degree of mystery. On learning this, some of you, our friends, may be led perhaps to avail yourselves of the coming day of oak-apples, to look beneath their surface. If there be one of you accustomed to estimate Nature only by her economic uses,—one who has never thought of galls but as associate with ink,—of willows, save as material for baskets,—of roses, save as ingredients of a *pot-pourri*,—what will you think, on finding that the oak, the willow, the briar-rose, are, even in their excrescences, the supporters of animated worlds? What can you think but that your own mind must have been limited within a little world indeed?—a world from which you will be as eager to emerge, as is the Gall-fly from its oak-apple.



"Oh most royal retribution!"



A LOVE AMONG THE ROSES.

“ Or who a two-fold apparatus share,
Natives of earth, and habitants of air,
Like warriors stride, oppressed with shining mail,
But furled beneath their silken pennons veil;
Deceived—our fellow-reptile we admire,
His bright endorsement and compact attire,—
When lo ! the latent springs of motion play,
And rising lids disclose the rich inlay ;
The tissued wing its folded membrane frees,
And with blithe quavers fans the gathering breeze ;
Elate towards heaven the beauteous wonder flies,
And leaves the mortal wrapt in deep surprise.”—ANON. 1735.

YOUNG ladies, and old, and ladies of a certain age, all of you who have propensities for petting, we can recommend to you a pet,—a novel sort of favourite.’ We will describe his person

and his qualities. In figure, he is a model of miniature proportion, a match for the German Dwarfs, a rival of General Tom Thumb, and a contrast to many of his pigmy order, frightful in big-headedness, or bulk of limb. He is clad in a coat of mail, which he never doffs; yet be not alarmed at his military array; for its wearer is as little formidable as certain field marshals, the marshal of the City, or the men in armour at the Lord Mayor's show. Never, indeed, was carpet knight more gentle; and though he wears spurs (badge of his order) they were not won in fight; nor does he ever plunge them into ladies' trains. His armour—how shall we describe it for lustre, taste, and finish? The finest suit that ever issued from the work-shops of Milan, rich in the most cunning inlay of gold or steel, would prove, if compared with it, a rude, unsightly piece of workmanship. On the back of the corselet, burnished green and gold are the prevailing hues, while in front, on breast-plate, cuisse, and gauntlet, the lustre of the precious metal is predominant, mingled with changeable reflections of purplish crimson. But description fails in doing justice to an array so brilliant. Let us proceed, therefore, to its owner's character and habits, which are in all respects consonant to his polished exterior. His gentleness has been before adverted to, and he is no less distinguished for taste and delicacy. No gross and greedy appetite defiles his form or nature; for nothing coarser than honey or the golden farina of flowers, moistened by the juice of fruits, makes up his table of regale-

ment. He loves, while yet in freedom, to ride upon a sun-beam; but would be content, when once enthralled, to bask only in the sunshine and his mistress's smile,—to revel and to sleep upon a bed of roses. What think you, ladies, of this our candidate for your especial notice? In proper and euphonious parlance, '*Cetonia aurata*' is the fitting appellation which he bears; but to you, probably, if already known at all, he is more familiar as 'a nasty beetle!'

Yes, it is thus, doubtless, that, blinded (as some are for their live-long day) by the morning mist of early prejudice, you have been led to miscall even that beautiful creature, the *Rose* or *Golden Chafer*; with a multitude of others scarcely less worthy of admiring notice.

The first unlucky *Scarabæus*, which may have crossed the toddling footsteps of our childhood, was made, perhaps in our childish fearlessness, an object of manual examination, and that with impunity, for the insect is almost always as innocent as we were once. But only let nurse, or some other person grown up in error, have been at hand, and our earliest experiment in entomology would have been abruptly ended by a warning lecture, rendered intelligible to our dawning apprehension in the sense, at least, of fear and repugnance. With this false impression, struck anew on every occasion, and deepening with our strength, we grow up; if to manhood, with dislike; if to womanhood, with terror of every thing that wears a beetle's shape, although it is one considered by entomologists as the most perfect (or per-

haps, where *all* is perfection, we should say rather) the most elaborate and certainly the most permanent of insect forms.

Let it not, however, be supposed that we would give the rein, without restriction, to that spirit of inquiry which children are so fond of putting into practical exercise upon insects and other living objects. We should no more encourage them to handle a spider or a beetle, harmless as they are, than a wasp or hornet. We would only have them taught to leave the creatures unmolested, by an appeal, as soon as reason and feeling open, to the best, instead of to the worst, of their dawning propensities. To tell them *truly*, that by molesting they will cause pain and injury to a harmless little animal, is calling forth their tenderness and self-denial. To tell them *falsely*, that if touched the insect will cause pain to *them*, is at once to instil an error, and to excite in them unnatural antipathies and selfish fears.

To return to the Rose Chafer, of whom our recommendation as a pet was more than half in earnest. We have now ourselves a pair of these pretty insects caged in an open-worked basket, with serious intent to test the extent of their longevity, said by Roësel to have reached, in an individual of his own keeping, to the term (for an insect patriarchal) of three years. As was done by the German naturalist, we supply our captives, in addition to their favourite roses, with fruit and sugared moistened bread,—a fare with which they seem by no means disposed to quarrel, any more than with each other, and such

excellent friends are they, as often (like an insect Helena and Hermia) to

“Have with their” *jaws* “sat working at one flower,”

or at the demolition of one strawberry.

Placed at a southern window, they seem quite content to revel in the hearts of gathered roses—appearing to strip the pollen from the golden anthers, and, when roused to more than usual activity by the warmth of the sun, to traverse the open bars of their straw prison, seldom attempting to unfurl their “silken pennons” from beneath their golden mail. They would prefer, doubtless, ever and anon, to “fan the gathering breeze,” in a transit from one flower to another, but they certainly submit to their thralldom with a better grace than the wild bird under similar circumstances, and we therefore regard ourselves, as their captors, something less hard-hearted than the starling’s jailor. “But where is the use,” says somebody, “of keeping beetles? They do not sing to you—they do not love you—they do not even know you.” “True,—neither, we suspect, do the golden fishes, kept in your window, in crystal captivity. Your finny prisoners will rise perhaps to your hand for a bit of bread, and our mailed ones will come to ours, drawn by the magnet of a strawberry. But the main amusement afforded by your swimming captives is pleasure to the eye, as it follows, with admiration, the brilliant reflexes of their scaly sides; and we affirm that our green and golden favourites, their “bright

endorsement" glittering amongst the roses as they revel in their hearts, are objects to the full as pleasing. By keeping them we are likely also to inform ourselves on the little-known subject of insect economy. We find, for instance, that our chafers of the rose, contrary to the usage of the cock-chaffer, go to bed with the sun; and just as the majority of beetles, which have lurked all day under leafy coverts, stones, and in other darksome hiding-places, begin to wheel their drowsy flight, amidst the shades of evening, these lovers of the light retire with its disappearance, and about sunset regularly hide themselves, for the night, either beneath their roses, or within the bed of light earth with which their basket cage is furnished. We fancy also that by observation of our chafer's ways we have gained also a little insight into their characters, as socially considered. Though their earthen bed is spacious as a "bed of Ware" they are almost invariably, when retired for the night, to be found lying side by side, and, though little enough of animal warmth is likely to be transferable through their coats of mail, they must certainly derive some sense of comfort from proximity.

That these little creatures, possessed of no audible voice except the loud shrill buzz of their powerful wings while passing through the air or lighting on a rose, have yet a language of their own—a mode of communication and a way of influencing each other's movements—was further proved to us by the following circumstance.

From June to August of the last summer, instead of a pair we kept a trio of these pretty beetles, which, as regularly as night approached, were in the habit of betaking themselves to rest. On introducing a fourth into the basket, we found that the new-caught stranger, refusing to associate on the first night with his more domesticated associates, remained at the top instead of retiring to the bottom of his prison-house. By the arrival of a second night, you might have supposed the restless intruder somewhat reconciled to captivity, and ready to go to rest quietly with his fellows; but not a bit of it—he had only communicated to them his own sitting-up propensity. Another had accompanied him to the top, and, owing, as it seemed, entirely to this “evil communication,” our little prisoners abandoned for a time their “good manners,” and, as long as the warm weather lasted, were as often found, after sunset, out of their beds as in them.

Now if any of our fair friends should feel disposed to try for themselves the keeping of some of these “loves among the roses” they may lodge them, if they please, in a style of appropriate elegance. In the stead of a basket let them be provided with a round closely-wired cage, high enough to contain in its centre a bunch of roses, and wide enough to admit of a surrounding bed of light earth or sand. An ornamental cage, thus furnished with fresh roses, and tenanted by insects which in resplendency of metallic lustre almost match the humming-bird, would be no disgrace we take it to the window of a

drawing-room or ladies' boudoir; neither, we consider, would it be employment unbefitting for ladies' fingers to supply the captives with fresh flowers, or treat them with ripe strawberries.

Well, but perhaps say you, when the last rose of summer is departed, and the last strawberry is gathered, what then will become of our rose beetles? Why, for lack of summer flowers, the rose, the peony, and elder, they must content themselves with flowers of autumn, dahlia, marigold, and aster, and with autumn fruits, the plum and pear. But when winter comes in earnest? Then it is likely that, according to the usage of their out-door brethren, which retire for the season to chambers underground, your domesticated chafers may betake themselves, for the same, to the bed provided them. In the case however (though this is not, we believe, in favour of their longevity) of their being roused to activity by the warmth of house or fire, a moistened fragment of our "staff of life" will suffice amply to support the light burden of their vitality.

We have said nothing, hitherto, of the earliest, which is almost beyond doubt the longest period of the rose-chaffer's existence, however far extended. Like the rest of its tribe, this pretty beetle undergoes the usual triple metamorphoses of insect life. From an egg laid within the earth, he emerges, a grub or larva, to feed on roots, most usually those of the rose; the "family tree" from whence his parents, at all events his mother, has descended. Thus, hermit-like, and upon this hermit's fare, he lives in dark seclusion for four years, and

when these are over, constructs for himself, about the month of March, a still more straitened cell,—an earth-formed case resembling a pigeon's egg. He proceeds, under its cover, to the second stage of *Pupa*—from thence to the third and last estate; and after remaining yet another fortnight underground, for his enamelled mail to acquire hardness, comes forth in all his splendor to meet the opening roses. The antennæ of this as well as of the common cock-chafer, are of curious and very elegant formation. They each terminate in a knob composed of several laminæ or plates, opening or shutting like the leaves of a book, and which also like a book can be put away at the pleasure of their insect owner, on a shelf or deep cavity on either side its head. They are always thus put carefully away when the chafer is inactive or asleep.

It has been noticed as a singular fact that the rose beetle has been found not unfrequently, while in its two first stages, the tenant of an ant-hill, and that, without being attacked by its carnivorous inhabitants. It is hence called, in some countries, “king of the ants;” and it is said also that German cattle dealers invest it with supernatural powers, and feed it carefully in boxes as a means of insuring prosperity to their herds and fortunes.

Had the above superstition been Irish instead of German, it might have been readily enough explained. Ant-hills were formerly if they are not still called in Ireland “fairy mounts,” and held, as such, in profound veneration by the common

people, who feared to disturb one of them, lest they should incur the vengeance of the fairies. The rose chafer's apparent sovereignty over the ant-hill would have naturally therefore invested him, in Hibernian eyes, with the dignity of King of Fays, and have made him, in consequence, an object of propitiatory homage.

Although we have enlarged on the idea, we are not the first, be it here observed, who has been bold enough to recommend "a nasty beetle" to the notice of the ladies. John Curtis, the celebrated botanist and entomologist, selects from another family of the same order, the *Cerambyx moschatus*, or musk beetle, as a worthy object of their observation, and as one amongst others whose keeping would afford "a rational amusement in the contemplation of nature's works," a small sallow or willow, planted in a garden pot, would afford, he says, a suitable station for this brilliant and graceful creature. As regards elegance of figure we must confess, freely, that our "Love among the Roses" must resign the palm to this "Narcissus of the Willow," often imaged in the glassy streamlet. In richness of enamelled bravery, green, and gold, and purple, the recommended favourites are much upon a par; but there is one personal and peculiar charm possessed by "he of the willow" over "he of the rose," from whom, however, we cannot help suspecting, that the former must once have slyly filched it. This gift, or stolen jewel of attraction, which may very likely turn the scale at once in its possessor's favour, is none other than a delicious perfume,

not of musk, but roses, which the Musk-beetle always carries about him, and at times scatters around him with more than usual prodigality. So powerfully, in warm weather is this scent emitted, that the air in the neighbourhood of an old willow tree (one of their favourite resorts) has been described as laden with it; and a box wherein one of these insects had been confined was said to have given evidence of the prisoner's sweet presence for six weeks after his release.

The usual food of this willow-beetle is, we believe, the sap of its favourite tree; but one is recorded to have been found regaling on a ripe gooseberry,—a fruit which would, no doubt, therefore, be received with acceptance from the hands of a gentle keeper.

Taking a July ramble through the woods or lanes of some of our southern counties—Essex, Kent, and Hants especially—it is more than probable that we may fall in with a gigantic forester, clad from top to toe in blackish mail, with head broader than his shoulders, and jaws, armed with formidable teeth, longer than his head.

“Oh! the horrifying monster!” exclaims, with a shudder, one of our lady-readers. “You can never, Mr. Cricket, intend to add a Caliban like this to your list of pretenders to our favour.” “Most assuredly, dear Madam, we have introduced him for the very purpose. Monster, as you call him, he is one of the most harmless and gentle in the world. Aye, and playful in the bargain. Only give heed, we prythee, to

the written character (in a domestic situation) of one whom you are pleased to designate a Caliban." "After a time (says his master) he became quite tame and playful, and sometimes amused himself by tossing about a ball of cotton with his horns. He was very fond of sugar moistened, and the juice of raspberries.—There's a pet for you! so delicate in feeding and playful as a fawn; and now for his name. He is not a fawn exactly; but he is a stag—*Lucanus cervus*—Stag-beetle. We have said not a word as yet about his *horns*; but we have told you of his *jaws*; and though of horns he is not destitute, the enormous toothed appendages to which he owes his name are veritable grinders. To look at, they are in truth, tremendous weapons; but they are innocent of all save vegetable blood; and used only to wound the tender branches of oak, or birch, or chestnut, for extraction of their circulating fluid. It is possible, indeed, that, with intent most harmless, he might mistake a lady's finger for a silver birch-twigg, or a peeled band of hazel, and sorely pinch it even to the flowing of the crimson sap: of this, therefore, let his mistresses beware."

When speaking of our "Love among the roses," we noted the curious *Laminae*, or leaf-like appendages, with which each of its antennæ terminate. Those of the Stag-beetle are somewhat similarly furnished; for which reason he, as well as the chafer, has been classed as a *Lamellicorn* beetle, though of a group or tribe entirely distinct. As connected and in admirable adaptation with these elegant antennæ and their

laminated knobs, is an instrument furnished by nature to the Stag-beetle for the purpose of keeping them in proper order. This is a *brush* of golden-coloured hair near the base of the fore leg, "evidently," says a close observer,* "for the purpose of cleansing the antennæ when rendered viscid by sap. The insect has been noticed thus to employ this useful little article, at all times ready to its hand. Like the majority of his Beetle brethren, *Lucanus Cervus* is accustomed to keep within covert during day, and take its flight about the hour of sunset. Its appearance, when on wing, has been likened to that of a flying duck in miniature. The wood of decaying trees is the nursery wherein, as a grub or larva, this insect forester passes the period of its infancy. We have now a Stag-beetle "set up" before us, and we are compelled, as we look upon this insect giant (a dwarf though, in comparison with some of his foreign relatives) to confess that he is a wonderful and admirable creature. So solid—so compact—so perfect—so permanent!—he has nothing about him of insect lightness and fragility. Armed, not merely "to the teeth" but to the very eyes, in his encasing panoply of ebon hue and ebon hardness, even death makes no impression on his outward form; and the ten years' occupant of a collector's cabinet shows as fresh and life-like, in all but motion, as a really living specimen. The same qualities of perfection and permanence (added in some species, as in our favourites of

* Mr. Waterhouse, Entom. Mag.

the rose and willow, to extreme brilliancy of colour), belong, more or less, to the whole order Coleoptera, comprising the numerous varieties of the Beetle tribe.

Of a smaller size, but in no other way inferior to those above described, there are many others of our natives, which, for handsome exterior, pleasing habits, and as cheerfully associated with summer sunshine and summer flowers, are well worth looking after, not only without doors but within. Foremost among these are the *Chrysomelidæ*, "Golden Apples"—at once the nonpareils and pippins of their kind,—so round and plump, and streaked, and shining, and glowing (according to their varieties) in scarlet, azure, gold, and green. Innocently herbivorous, and socially gregarious, the dead nettle and the broom afford some among them with favourite pasture, and may therefore furnish to the gatherer a sprinkling of these golden apples which are now in season.

Much more common than the above, certain almost to be found on every group of thistles, is the little Tortoise-beetle,* with wing cases, like an over-lapping shell, and green as the leaf it feeds on.

Then (a striking contrast with the above rotundities) there is the pretty and many-coloured tribe of Weevils†—of form elongate, and further lengthened by a slender beak or rostrum, employed as a spiggot for the tapping of their favourite sappy wine. One of these, now very abundant, especially on the

* *Cassida equestris* (Tortoise Beetle.)

† Weevil (*Cerculio*.)

black thorn, is a little fellow, with a coat of green verditer—sometimes glossed with gold. From its bright and unusual colouring, this tiny beetle can hardly, we think, be otherwise than known to many; who may have observed also that “family feature” of a prodigious beak or snout, which will serve as an index to the rest of its members.

We might add a score of others to our list of pretty English Beetles; but we shall conclude it with some insects of excellent beauty—the “Cardinals,”* which assembled last month, and are still to be found sitting in conclave on the white blossoms of the hawthorn, with which their scarlet robes and black stockings form a striking contrast. Now only let our readers make acquaintance for themselves with all or some only of the insect individuals which we have endeavoured to introduce, and if, after having done so, there be any yet among them determined to class every beetle under the ill-applied epithet of “nasty creature;” why then we must condemn them as incorrigible offenders against good taste, and would at once transport them to Brazil, or China, the Indies, the Cape, or even to the penal settlements of Australia, where they would have an opportunity of beholding beetle gems vying with the emerald, the amethyst, the ruby, and the diamond; and learn, perhaps, to estimate some of the very jewels which, in only diminished lustre, they have trodden under foot at home.

* *Pyrochroa coccinea* (Cardinal Beetle.)

We are told by Kœmpfer, that the ladies in Japan have long ago adopted with their brilliant beetles the custom we would introduce with some of ours—that of “keeping them” for their incomparable beauty.

Nor are Beetles the only insects under foreign domestication. Our prototype, the cricket, is said to be kept in Spain, and hung by the fire as a song-bird in a cage (of paper) for the merriment, if not melody, of his chirp.

Again—not as a bird of song, nor yet as a bird of beauty, but as a bird of flight—the cruel carnivorous Mantis is kept, we are told, for sake of sport, by “Young China,” as fighting cocks were once kept or patronised by “Young England.” By the class which this term is used to designate, the latter custom would now, we doubt not, be indignantly and with justice disavowed; and we would hope, therefore, that in our new relations with the Celestial Empire we may never hear of an exported main of regular bred game-cocks being returned for an imported cage of regular trained fighting Mantises.

Insect imports, for better purpose, not merely as cabinet specimens but as living objects of admiring interest, we should indeed most gladly welcome from China,—that land where the strange and grotesque, mingled with the splendid, prevails to the full as much in insect as in artificial forms; the latter borrowed doubtless in a measure from the former.

Brought from their native climate in the egg or pupa, and reared in adapted temperatures, we see no reason why our hot-

house exotics should want their insect adjuncts—glorious butterflies—glittering beetles—walking leaves—spectral branches—living lanthorns,—which latter would afford us, by the way, an opportunity of seeing for ourselves whether the Chinese lanthorn-fly, as has been asserted by some recent traveller, carries a lanthorn without a light—“*lucus a non lucendo*.”

We have spoken elsewhere of the most interesting of all objects for which insects can be kept—that of observing their transformations, and the various processes of their constructive skill—those especially of the Order Lepidoptera, comprising moths and butterflies. If this practice, instead of being nearly confined to professed entomologists, were very generally followed, the country would have fewer idlers, nature more admirers, and (it could not be otherwise) the God of Nature more praise.

Were we to talk about pet caterpillars, we might be set down as more monstrously absurd than even in our recommendation of pet beetles; but, however people may smile at the idea, it is seriously and perfectly true that we have had certain caterpillars long enough in our keeping to have acquired for them a sort of fondness, and to have felt sorry when their change came. Of these some were the beautiful larvæ* of the sphinx or hawk moths, which, with their gaily-coloured and sometimes shagreened skins, mitre-shaped heads, horn-like tails, and sphinx-like attitudes, seem to have so

* Larvæ of the Sphingidæ (Hawk moths or sphinxes.)

little of the crawling worm about them, that one can hardly help regarding them almost as creatures *sui generis*. Specimens of these may be found, next month, upon the poplar, lime, and privet.

But foremost of our favourites, among their kind, are those wonders of the willow, the gaudy caterpillars of the puss moth,* which sitting up so demurely on their boughs look, even more than the sphinxes, like animals which “stand” as well as sit “alone.”† After having watched and tended one of these singular creatures from its tiny kittenhood (and then very like a kitten is it) up to the period of its *cat*-erpillar growth, we have really missed it from its ‘customed seat—a perch of willow stretched across its box; and whereon, when nearly arrived at its bulky maturity, we have often upheld its painted body, while, with head protruded from its hood-like shoulders, it has set busily to work upon a fresh supply of leafy provender.

Now only let some of those, who laugh at the idea of fondness for a caterpillar, ask themselves if they have never felt fondness for that whereon a caterpillar feeds—for a plant—we mean that peculiar liking, distinct from general, which we are apt to entertain for a favourite plant of our own. To tend on anything day by day—to minister to its benefit—for that thing to depend on us for life—though perfectly unconscious of its dependence—is enough, it can hardly be disputed,

* *Cirura vinula*.

† See vignette to “A Summer’s Day Dream.”

to create a feeling which borders on attachment for even an inanimate object. Is it strange, then, that from the like causes the like results should follow with a creature endowed with consciousness, and possessed of senses resembling our own?

We know, indeed, that flowers are (as they should be) universally loved, while insects (the creatures of all others most nearly allied to them) are, as they should not be, almost universally disliked. But in proof that the latter prejudice may be overcome—not by argument, nor yet by ridicule—but by the seeing of the eye, we must be allowed to quote our old domestic, in whom it was the growth of seventy years, and deep-rooted in the weedy soil of ignorance. Like all persons of her class and many of a higher, she held the orders of beetle and caterpillar in especial abhorrence; and when we first began to keep “our hobby” in the house, Martha was almost as highly disconcerted as if we had brought home a new housekeeper. It was bad enough to see the flower-pots in our window-seat displaced for gauze-covered boxes, with the half-veiled horrors they contained. It was too bad to behold us returning from our daily walk—hands laden with littering boughs and ugly weeds—pockets with pill-boxes, each with a living pill—how hard for her to swallow!—in the conviction that some or all were to become new inmates of the parlour. It was worst of all for us to come home (as in spring-time not rarely happened) with mud-covered shoes

and bespattered gaiters—evidence of our having been out fishing—not after wholesome perch or carp, but after insect fry—“poisonous pond varmints!” for whose domestic accommodation she looked upon the commonest of all her basins as too good by half. Poor Martha! Time was when all these, our harmless practices, brought thee both sore annoyance and something worse; since we believe, verily, that thou didst take them for signs significant of thy old master’s approaching dotage.

We value our humble friend a great deal too highly ever to feel quite indifferent about her opinion—far less her feelings—however founded in lack of knowledge or in weakness. We essayed, therefore, quite as much for our sake as for her’s, to overcome her prejudice against the insect race, and we have succeeded; but it was by means of going to work very gently with her antipathies.

We fanned them with the wings of butterflies—dazzled them by the lustre of our golden chafers—amused and fairly deceived them by the oddity of our caterpillar “puss.” Having thus cleared a loop-hole for its entrance, we threw in on each of our subjects a ray of light,—by the double evidence of eyes and spectacles, convinced our wondering convert that butterflies are of caterpillars come—that there is no such great difference, after all, betwixt the green chafer, our love among the roses, and the black-beetle—her horror among insects—and even that there are not wanting strong features

of family likeness between the sitting "puss" of the willow and the common crawler of the cabbage.

These were steps of progression; and we have now brought her—or, perhaps we should say more generously, she has brought herself—to look with complacency on our insect menagerie—nay, what is more, has brought her fingers to bring us, and with a smile of triumph, what she (poor soul), in spite of all our schooling, takes for something *new*—albeit, perhaps, a caterpillar from a cauliflower, or a cockroach from the kitchen. She even looks with a reconciled eye upon our pet stag-beetle.

Apropos of this Goliath of British Coleopteri. Though reputed to live on sap, we have never, during the six weeks of his captivity, seen him extract it from leaf or branch by pressure of his pinching jaws. His preferred and chosen fare is the syrup from sugared bread, and the only leaves he cares for are those of which the surface is bespread with honey-dew. He seems, in short, to dispense gladly with all labour incidental by nature to procurement of food, and, provided always that he be defended from the unwelcome intrusion (by a leafy canopy) of daylight, seldom evinces restlessness, not even of an evening,—his time when at liberty for taking wing.

On two occasions only has he shown impatience under confinement, and these have been previous to and during thunder-storms, when atmospheric influence has urged to the most energetic efforts at escape.

The interest we have taken ourselves in noting the ways of the above and other living specimens, we would fain excite in others; but, without further instances or argument about the matter, only let any body begin keeping insects, and, we answer for it, he will soon begin to like them. With keeping and liking must come of necessity increasing observation of their beautiful and wondrous formation, and yet more admirable instincts, exemplified especially in their constructive skill. With these brought daily beneath our eyes, can we do otherwise than raise our thoughts towards Him by whom these excellent endowments were bestowed on—what we shall certainly consider no longer as the meanest of his creatures; and if we can say and feel that *this* is, to us, the result of keeping insects—laugh at us who will, it is a practice of which we need never be ashamed.



“Here’s a pet for you!”



THE TRIBES OF AN OAK.

“ While out the hollowed root, with sweets inlaide,
The murmuring bee her daintie hoarde betray'de;
Its sturdie side did brave the nippinge winde,
Where many a creeping ewe mought gladlie reste.
Warm comforte here to all and everie kinde,
Where hunge the leaf, well sprint with honey-dew,
Whence dropt their cups, the gamboling fairie knew.”

WE have ascended to a lofty eminence, whence, as a spectator of London looking from the summit of St. Paul's, we are taking a bird's-eye view over a populous city. In the high-ways swarm a motley multitude, passing and repassing, some on business, others on pleasure. Some are employed in the

erection of solid habitations—others are raising shady tents upon the spots of verdure with which, above all other capitals, this city abounds. Others, again, are weaving for their occupation large silken hammocks, or are rocked within them by the breeze, while they take refreshment or repose. Of these, some are now issuing from their luxurious abodes; and, as if the footways (although of wood), were too rugged for their tender feet, are laying down silken carpets on the ways they are about to travel. Yonder, on one of the smooth green areas, slowly advances a compact military-looking body, marshalled in files, dressed in uniform, and headed by a leader.

And now what have we here? A group, as it would seem, of pantomimic players, belonging to some strolling company. Truly, they are clever fellows in the art of posture-making. Ye Grimaldis of Greenwich, and balancers of St. Bartholomew! hide your diminished heads behind your baize drop-curtains! Ye are but bunglers in your trade!

Look at one of the performers. He grasps with his feet an upright pole, with which his body, extended horizontally, stiff and motionless, forms a right angle, of which both sides, instead of only one, look as if formed of wood. What prodigious strength of muscle! He looks like a cataleptic patient under the hands of a mesmeriser. See now one of his companions—head and feet nearly met upon the ground—back raised into an arch or Greek Ω . This strange position would seem but a part of his walking-movement; for now, stretching

forward, he plants, as it were, with his hands, another step; then drawing up his rear, brings feet and heel again almost together, and so progresses, looping as he goes, and measuring the ground he treads on. A third of his comrades, dressed in like manner, is sitting idle on a horizontal pole, raised a tremendous height above the ground. But now—powers of earth and air!—he throws himself off his station, and must be dashed to atoms! Not he! the rogue! for there he hangs suspended by a slender rope, mid-air, like “one that gathers samphire.” Will he let himself drop, now, from that still fearful height, or has he yet more length of rope (hid nobody knows where) to let himself down easy. By Jove! neither. He’s climbing up again by the line to which he dangles: and now he’s reached the top—the place from whence he fell. Bravo! master tumbler! Bravo! most excellent posture-master! You shall have our interest for a season at Vauxhall!

Contrasted with these, who seem the idlers of the city, we see, here and there, tottering under enormous burthens, and distinguished by their dingy hue, large heads and slender frames, some who appear the most laborious of all the labouring population. Occupying the lowest quarters of the metropolis, and emerging from underground, this class corresponds, apparently, with the subterranean dwellers of London and all great capitals—denizens of cellars and dark kitchens, and drudges of the community.

This, and much more, though nothing perhaps altogether new, is to be seen “under the sun” in the highways of this extensive city; and there are also other things (alas! not new either) going on in the shade and the bye-ways thereof. There murder is boldly stalking, or sily lurking. The strong are preying on the weak. Members of one society, nay of one family, are openly attacking or secretly injuring each other; while greedy parasites are for ever preying on the substance of those by whom they live.

Now, shutting our eyes on the creations of Fancy, let us open them on the realities of nature.—Where are we?—Our populous city, like Aladdin’s palace, has disappeared, and in its stead stands, in solitary grandeur, a stately oak-tree. How! exclaims, perhaps, some plodding follower of our wandering lucubrations; have we been all this while led astray by pretended descriptions of what has no existence, save in the realms of imagination?—By no means, we can assure you. We may have given, indeed, both to our structures and their inhabitants something of the form fantastic, such as is assumed by the boughs of yonder oak, as they mount in airy evolutions to the clouds; but like those, also, they rest on solid bases, and spring from vital roots. The oak itself, with certain of its usual occupants, has stood, in fact, for our opening sketch. The objects have been traced precisely as they exist. Let us only fill up their outlines, and give to each a name, and we

VOL. II.—7.

shall have no picture of fancy, but a faithful representation of dwellings that are raised and of the dwellers which raise them, if not on every oak tree, in every wood of oak.

Let the main thoroughfare and diverging streets of our city be represented by the trunk and branches of the oak tree. In its verdant foliage we may see the green places with which those streets are surrounded and interspersed, while, to render the analogy more complete, the pipes by which a capital is watered are not unaptly paralleled by the vessels which convey and distribute the pervading sap.

Here is our capital; now for its inhabitants—and these are made up, as may have been surmised already, of an insect multitude, such as on the oak, above every other tree of the forest or the garden, are accustomed to populate every quarter—root, branch, and foliage—and all of them engaged on some purpose of utility or pleasure.

To begin with the builders, and their solid erections, completed or in progress. Following the course of some branch (or highway) we shall presently perceive them. And here we have one*—a covered structure of triangular form—its walls composed, apparently of a sort of tiling, which resembles in colour the back of the smooth branch whereon it is seated—and there we see another—and another (call them what you will, huts or palaces)—not contiguous, but as regular in plan, aye, and more so, than the houses in our best-built streets. On another diverging branch are several similar erections, in

* Vignette.

different stages of progression, and employed on each of them we can discern a single artizan, who is preparing the abode for his own solitary occupation. This labourer is a small yellowish white caterpillar, tinged with red, each segment of his body being studded with tufts of red hair. He has fourteen feet, and the upper part of his body is more flat than in the generality of the caterpillar crew. He has also two brown spots behind the head. On commencing operations he measures (using his body as a rule) the place intended for his structure—the basement of which is of a triangular form, with the apex at the lower end. “The bricks or tiles of which the building is composed are small rectangular strap-shaped pieces of the outer bark, cut out from the immediate vicinity. Upon the two longest sides of the triangular base he proceeds to build uniform walls, also of triangular shape, and both gradually diverging from each other as they increase in height. When finished, the little architect proceeds to draw them together by pulling them with silken cords till they bend and converge and meet. When the two longest sides are thus joined, an opening is still left at the upper and broadest end of the triangle, which being filled up in a similar manner, the building is complete”*—without, and, when tapestried with silk, is furnished within. This clever bark-builder, for whose operations May is the usual season, is the caterpillar of a moth.†

* Insect Architecture, p.198.

† *Pyralis Strigulalis*.—Kirby.

Next for the tent-makers—those who, not living in the streets, set up their lighter tabernacles on the verdant spots—the green parks of our embowered city; in other words, upon the foliage of the oak. These also are caterpillars, belonging to a family of small moths,* which employ the leaves of various trees, not only for food, but also as material for the construction of most curious and elegant abodes. “These tents† are from a quarter of an inch to an inch in length, and usually about the breadth of an oat-straw. They are of the colour of a withered leaf, being cut out, not from the whole thickness, but artfully separated from the upper layer, as a person might separate one of the leaves of paper from a piece of pasteboard.” For a minute description of the ingenious shaping of the pieces employed, and the mode of their joining and elevation, we must refer our reader to the details of “Insect Architecture,”‡ and his own observation, only adding, that when completed the constructor and occupier of this pretty pavilion carries it upright on his back, as a snail its shell; and with body thus shaded and protected perambulates the leaf on which he feeds. Tents of this description are plentiful through the summer on the elm, the hawthorn, alder, pear, and other fruit trees.

Next to these, and much more conspicuous, on a survey of our insect city, come the silken hammocks and their luxurious occupants and weavers. These are also caterpillars—those of

* *Tineidæ*.

† Vignette.

‡ Insect Arch. p. 225; also Reaumur.

a moth in some years very common, called the "Brown Tail.* Instead of, like the "tent-makers," working by themselves, and for their own exclusive accommodation, these are a social race, and labour together at the formation of their nest or hammock,† which is composed of greyish silk, and in form irregular, either roundish or angular, according to its situation either in an angle or at the extremity of a branch, the leaves of which are drawn together and included within the walls. The most careless of strollers must often have noticed, towards autumn and through the winter, not only upon oaks, but also upon beech, apple, and pear trees, and very frequently on the rose, large web-like masses of silk, with leaves enclosed, and these are the abodes of which we speak. This common dwelling is partitioned within into chambers for one or for several occupants, which communicate by doorways. When the frosts commence, the silken walls, both outer and inner, are thickened by new layers of tapestry, and thus snugly fortified, their inmates, who are also wrapped in sleep, bid defiance to the autumn gales and cutting blasts of winter. When invited abroad by the genial breath of spring, and the tender leafy provender which spring provides them, the members of this luxurious community begin to make excursions from their protecting tabernacle; and on these occasions the leader of the band always lays down for the succeeding steps of

* Silken Hammock Weavers. Caterpillars of Brown Tail Moth (*Porthesia auriflua*), and of Gold Tail, ditto.

† Vignette.

his companions a strip of woven carpet. This silken clue serving as a guide, the caterpillar-ramblers, however far and wide their predatory travels, have no difficulty in returning to their home, to whose shelter they are always driven by heavy rain or scorching sun. Both the hammocks and habits of these social "Brown-Tails" nearly resemble those of the black, scarlet, and white caterpillars of the "Gold Tails," also common on the oak. It is observed by Reaumur (speaking of these treaders upon silk), "*Nous pavons nos grands chemins ; elles tapissent les leurs.*"

With the above and other social caterpillars (as is usually the case with associations amongst mankind), the sole bond of union would seem to consist in mutual weakness and mutual protection ; for when they have attained to a certain size, and arrived at that season of the year when injuries from weather are no longer to be dreaded, they disperse each upon its individual range, while the winter home of their infancy is abandoned to the spider, the ear-wig, or whatsoever stranger may choose to take possession. Having thus rambled singly, and ate their fill in solitude throughout the sunny month of June, July sees the termination of their caterpillar life.

Where now is our corps of seeming soldiers?—the body which we saw progressing in regular "rank and file" across one of the smooth green areas of our city. Most of the social caterpillars, whilst occupying a common abode, are accustomed to

move in a certain degree of processional order; but the species more especially celebrated for the soldier-like regularity of their marchings, which are performed in parallel files, from one to six deep, and always headed by a single leader, is the "Oak processionary," a native of France, but not, we believe, of England. The same military mode of progression is, however, exemplified with scarcely less exactness, by several of our own caterpillars, when in broods recently hatched, those, amongst others, of the "Gold-tail" and "Buff-tip" moths, of whom more in another place. A company of the latter,* when just embodied (from the egg), and taking the field on the "green area" of an oak leaf, are accustomed to march slowly over it in even files, and foraging as they march to mark their progress, by leaving all behind them brown and arid, whilst all before them is fresh and verdant. Though, from the size of these Lilliputian troops, the colour of their uniforms is not very distinguishable, a close observer may readily discern that they are black and yellow.

The Tumblers and Posture-masters, whom we have described in the exhibition of their wonderful performances in the branching streets of our leaf-embowered city, belong to another and very peculiar tribe of Moth Caterpillars. From their singular mode of progression—wherein they seem, as it were, to *measure* the ground over which they pass—they are called "*Measurers* and *Geometers*,"—also, "*Loopers*," because they

* Vignette.

accomplish every step by alternately stretching out and *looping* up their bodies in the form of a Greek Ω . They are no less remarkable for the singular positions which their extraordinary muscular power enables them to assume, when quiescent. Attached to a branch by the hinder legs, they will remain for hours together, stiff and straight, stretched out at an angle from it, or bent into some contorted curve. Of this description are the walking-branch caterpillars, elsewhere noted.*

On being touched, or shaken, these wary tumblers—who are always provided, in their internal magazines, with a silken cord to break their fall—allow themselves to drop sometimes from the loftiest oak, and seldom fail to reach the ground in safety. The same rope serves as a ladder for their re-ascension. Numbers are sometimes seen thus suspended, resting midway in their aërial transits, and it would require a ruder blast than ordinary to break their strong, though almost invisible, supporting cords.

After these, some of the most idle of our city's population, we took notice of the most laborious—the occupiers of subterranean dwellings in its lowest quarter. Now, looking round the oak tree for their insect representatives, we presently discern them, in a dingy multitude of laborious ants—bearing their bulky burthens, and issuing from their dark abodes, excavated in the trunk or root. These are Jet Ants, or Emmets—black and shining as well-fed negroes—and without whip, or master,

* Vignette.

save their ruling instinct—as laborious as the hardest-driven son of Afric. Instead of black, these, however, might be dusky, or they might be yellow; but, of whatever colour, they must, of necessity, belong to that division of their tribe which, from the woody material in which they work (using their powerful jaws as a chisel), are denominated *Carpenters*. Huber gives an interesting description of these labourers' excavated dwellings; though, from their working under cover, he could not follow them in their operations. A fragment of wood, cut from the root or trunk of a tree where one of their colonies may be established, would give, therefore, to our readers as good a *view*—though, to all, we will not say as clear a *notion*—of their curious architecture as Huber himself was able to obtain. At all events, it is no fault of the clever builders, if *they* see *nothing* but a bored, mis-shapen mass, where *he* beheld, with wonder, “*streets*” looking as sombre as the smoke-dyed lanes of London—the structures of the “*Jet Ants*” always partaking of their own sombre hue,—“*galleries*,” horizontal and parallel, following the circular direction of the layers of wood, and communicating by oval apertures,—“*colonades*,” “*arcades*,” “*lodges*,” “*vestibules*,” and “*chambers*,” divided by walls, reduced, sometimes, by laborious chiselling, to the thinness of a sheet of paper.

Such are a few—and a few only—of the groups in activity—the labours in progress, within and about the oak; but under

our figure of a city, we have spoken of various deeds of darkness as being also in constant committal within its precincts. Here, indeed, there are, strictly speaking, no evil doings, because each society and each individual is acting under instinctive, in other words, Divine guidance—overruling all to general good. But though ordered to this end, and free, *in themselves*, from stain of moral guilt, there are not wanting, in our city of the oak, deeds dark enough in outward seeming—murderous—treacherous—revolting—such as serve to symbolize proceedings much too parallel in the communities of man. Where, amongst these, do the weak escape the ravages of the strong? and, amongst the tribes of an oak, numerous are the helpless which are for ever falling a prey to the powerful. Carnivorous ground-beetles are climbing, by day and night, up the rugged sides of the tree, to devour the helpless caterpillars which abound thereon. Of these destroyers, some are dark and grim of aspect (such as the Devil's Coach-horse),* but there are some of them beautiful as ferocious; one—a very demon of destructiveness, with channelled armour, resplendent in green and gold—clad, in the phrase of the poet, even as

“A mailed angel on a battle day.”

But an angel verily of darkness, for ever engaged in attack and slaughter of the defenceless and unarmed.

This brilliant destroyer is the *Calosama Sycophanta*, a beetle rarely seen in England; but a species smaller and darker, the *Calosama Inquisitor*—an insect also of no little beauty—is not

* Rose Beetle (*Staphylinus*.)

at all uncommon, during the present month, on the oak and hawthorn. The armour worn by *him* is, on the upper side, black and striated, with reflections of reddish purple, changed, on the margins of the scapulæ, to brilliant green, which is the prevailing colour on the under side. Besides the above, various predatory beetles*—fierce, and swift, and strong—are accustomed to make the oak and its precincts the favourite scene of their tragic performances.

In no other locality has the extensive tribe of *Parasitic* or *Ichneumon Flies* more fertile field for its insidious practices, than amidst the numerous tribes of an oak.

A corpulent caterpillar is stuffing its furred or velvet doublet with the juicy pulp of a young and tender oak-leaf. His thoughts—at all events his sensations—are completely centred in the business which he has in hand—more properly, in mouth; and he dreams as little of approaching danger as an alderman at a city feast, imbibing the green fat of turtle, while a sparkling chandelier hangs, perhaps suspended by an all but severed chain, over his devoted head. No chandelier, indeed, but destruction, in a living form as brilliant, hangs suspended over the unconscious glutton of the oak-leaf. An *Ichneumon Fly*, poised in air above him, her iridescent wings and black-shining body glittering in the sun, is fearfully vibrating her tail-like piercer, with intent to plunge it into the fleshy back of her well-fed victim. She stoops—her weapon enters—is

* *Curabi*.

withdrawn—and leaves behind it, in the wound, a germ of nascent torture a thousand times more dreadful than a drop of deadly poison—a tiny egg deposited within the warm orifice pierced for its reception. In a few hours this egg becomes a gnawing worm, which thrives and fattens on the vital juices, leaving carefully untouched the vital organs of the hapless gourmandizer, thus compelled to foster it. Its growth completed, the parasitic grub emerges, and then, in completion of its murderous part, spins a silken thread, with which it proceeds to bind the nearly exhausted body of its supporter (as Gulliver by Lilliputian cords) to the surface of the oak-leaf. Thus manacled, the shrunken remnant of the once plump crawler exists yet a few miserable days, while the young Ichneumon, having enclosed itself within a shroud of silk, undergoes its transformations, and finally emerges into perfect life, a sparkling fly, like its parent, close beside the then dead body of the creature by which it had been nourished to maturity.

Now for the last and crowning horror of the oak tree,—a proceeding “foul and unnatural,” which far “out-Herods” the Herodian performances just noted.

There is a certain black and yellow “Monster,”* also a caterpillar feeder on the oak-leaf, which is often accustomed to vary its vegetable diet by making a meal off a brother or sister crawler.

* “Monster Caterpillar,” so called by collectors (*Scopilosoma Satellita*).

Reaumur, speaking of this cannibal of cannibals, writes with amusing *naïveté*: "Elle n'a d'ailleurs rien qui la fit juger d'un si mauvais naturel. Elle paraît aussi douce qu'aucune chenille que ce soit." Out of a score of these fratricides, which he kept in a box, taking care to supply them with fresh oak leaves, one only remained, whose portrait he had taken while in the act of gorging its last companion.

In the above general picture of an oak tree city, and its occupants, we have taken the license of the dramatist and painter to group together several insect personages, which are not likely to be seen assembled under the sun of a single summer's day, though all are almost certain to be found in the course of a summer—excepting the social Hammock Weavers, who only occupy their abodes from autumn to spring.

Besides the very few of them above noticed, the oak has, at all seasons, a variety of insect inhabitants, or frequenters. So numerous are those already known, that the briefest description of them would fill a volume—and volumes accord not with our purpose, which is merely to scatter leaves—acorns, rather, of curiosity—to be productive, we would hope, of growths of inquiry,—all, like the oak, tending heavenwards.

We shall attempt, however, before we leave the court of the sylvan monarch, to introduce our country friends to some two or three other of their insect neighbours, who are distinguished by a residence within its precincts. A large number of Moth

Caterpillars, besides those already mentioned (the Bark Builders—the Hammock Weavers—the Tent Makers—the Leaf Marchers—the Posture Masters—and the Cannibal Fratricides of our city), begin, or pass a portion of, their lives upon the oak.

From the earliest opening of the leaves up to the present month, and beyond it, numerous varieties of these may be obtained, by spreading a cloth, or holding an inverted umbrella, under the shaken boughs of the tree; but the best hours (as collectors well know) for the performance of such operation are those which follow directly on the dawn of day, when the gormandizing crew are accustomed to assemble at their early breakfasts.

We have no room for description of the more common “fry,” which are likely to reward the early insect sportsman, by falling into his sheet, or umbrella net; but we must not overlook (nor must *he*) the queerest, perhaps, of all Caterpillar Fish—one which may happen, if good luck attend him, to be found in some August or September haul. This is the “*Lobster*” Caterpillar),—a prize, we can tell you; and though it will not now, when expanded into the “Lobster Moth,” fetch its fortunate finder, as it would once, a five-pound note, it will draw upon him for not a few notes of admiration, paid readily at *sight*. Without even the trouble of spreading net or shaking bough—with that, merely, of walking with our eyes open, we are just as likely to obtain possession of this insect oddity.

Taking a sylvan stroll, in the above-named months of August and September, and looking about and above us, we may perceive, seated on a branch—probably of oak, or maybe of beech, or lime, or hazel—a little monster, with head and shoulders elevated, *à la Sphinx*, and, stretched out above them, a pair of bony arms, jointed, long, and not unlike the claws of a lobster, while, to balance these, a couple of slender, horny appendages arise from near the tail.

This strange little animal, after having passed the winter as a chrysalis, enclosed in a silken web, and that often between leaves, comes forth, in the present month, a Moth, y'clept, from the monstrous figure of its caterpillar, "the Lobster," although, as a perfect insect, it displays, neither in form nor colour, any of the singularity which distinguishes its earliest stage. On the contrary, this beautiful Moth, like those well-judging few who throw aside, in maturity, the conceited eccentricities by which they love to be distinguished in youth, is an insect as little *conspicuous*, though, withal, as richly clad, as any of its tribe—for the hues of its wings, being grey, brown, red, and ochre, harmoniously variegated, assimilate very closely to the colouring of the oak bark and that of other trees, whereon, by good fortune or by good looking for, the "Lobster" may sometimes, about noontide, be "caught napping."

In following the "*Lobster*" to its winged estate, we have inadvertently given to eccentricity precedence over rank, or we

should otherwise, in mention of the adult Lepidopteræ of the oak, have given honour due to the "*Purple Emperor*," that princely Butterfly, to whom the oak tree furnishes, successively, a nursery and a throne. As a green Caterpillar, dotted with black and distinguished by horns, he feeds upon the leaves, changes next into a green chrysalis, and, attaining in July to the winged glory of his regal purple, cleaves the air in flights high and rapid as a bird of prey; but ever and anon returns to his lofty throne on the summit of the paternal tree, there to rejoin his empress, who is accustomed—as becomes her—to abide at home in domestic dignity.

We have talked about the "Emperor's" royal *purple*; but when in his royal presence you may possibly declare that his robes are only *brown*. Now if, on these his robes or pinions, we chose to pin a disputation, the Chameleon's self, as fabled, could not have afforded a better theme. But rather than quarrel on our subject, suppose we turn it towards the light, and from it, and then we shall both agree that our "Emperor's" wings are, in one position, of the darkest brown—in another, of the most resplendent purple.

Besides this monarch of English Butterflies, two other of our latest and handsomest, the *Admiral** and *Peacock's Eye*,† are frequently found veiling their glories from the September sun on the trunk or branches of the oak, or sipping in October the honeyed blossoms of the ivy.

* *Venessa Atalanta*.

† *Vanessa Io*.

Strikingly contrasted with these gay and richly-coloured Butterflies (*Lovers of the Light*), there is a beautiful and delicate oak moth, called the *Miselias*, meaning, literally, a *Hater of the Sun*. In the "Emperor" of summer—the "Admiral" and "Peacock's Eye" of autumn—we have the very sun flowers and dahlias of their tribe. In this, the "*April Miselias*," we have the violet, which after, as a chrysalis, sleeping all the winter under a mossy coverlet beneath the oak, comes forth with the April flowers to meet the spring; but hid from the sunshine, still loving to repose in the shady covert of its own or some umbrageous tree. In unison with the season of its appearance, the prevailing colours of this pretty moth are tender green and silvery gray, elegantly clouded, and striated, and spotted with darker hues. The best method of obtaining this little insect gem is to dig for it, while in chrysalis, beneath the oak.

We could go on for ever with descriptions of our sylvan favourites—the forest flitting moths (most fairy-like beings of these prosaic times), and of whom many besides the above are wont to be found haunting the precincts of the oak. We must be satisfied, however, with notice of one more tribe, peculiar to the King of Woods, and now, and in July, to be seen, like a bevy of fairest damsels, in full attendance at his court.

Only take your stroll this day through some oaken coppice, and there is little doubt but that you will presently perceive them, clad in the earliest and prettiest of summer garbs—light

green and silver—flitting or falling from the boughs around. In the course of a few weeks repair to the same wood, and then you will perceive, on the very boughs from whence you were saluted by a living shower of pea-green wings, a few, or perhaps a number, of the oak leaves curled up at the end, and confined in a roll by braces of white silk. Look within the scroll, and you will detect, in his lurking place, there feeding at his ease, a little green caterpillar, dotted with black (or, if later in the season, a brown chrysalis), the mischievous descendant of one of those pretty pea-green moths, which looked so harmless. But where, perhaps you will ask, is even the caterpillar's great offence? Rolling up an oak leaf and gnawing a piece out of it may seem operations fraught with no great mischief; but light as the sin and mischief may individually be, they assume, by multiplication, a most ugly and bare-faced aspect: for just as little sins in little people (often self-excused on the ground of insignificance), suffice to disfigure the whole aspect of society—so the united mischiefs of these little leaf-rollers are sometimes sufficient to deface an entire wood. That of "Oak of Honour," near Shooter's Hill, was, in one season, we are told by Mr. Rennie, deprived of its verdure by no grander agency—though this, perhaps, may be an extreme case. The handsomest and largest species of these pea-green moths of the oak have their upper wings barred with white; in both kinds the lower are silvery gray, and all elegantly fringed. The caterpillars of the larger sort,

in lieu of rolling a leaf, makes itself a curious boat-shaped cocoon.

A variety of Beetles, besides the cruel "Inquisitor," may be seen on the trunk, dislodged from under the bark, or found near the root of the oak. Conspicuous amongst these, the scarlet, black-legged "Cardinal," though more partial to the flowery May, is often found parading up the trunk, or taking a circuit around this, his paternal tree—under the bark of which he first saw darkness, and passed, monk-like, the period of his grub estate.

The *Carabus aterrimus*—a common dark destroyer of other insects, and even of its own species—the *C. nitens*, and a *Dermestes*, whose favourite food consists of the wood-lice which assemble behind the bark, are also amongst the preying beetles which frequent the oak.

The *Golden-green Cicada** is another insect often found upon the oak, from June to September. This is a curious, shovel-headed, leaping little animal, allied to the Cicada of singing celebrity, and, less remotely, to that which, while in its green state of infancy, produces and inhabits the frothy secretion so common on various leaves, and known usually as "cuckoo spit."

We have spoken already of several tribes of ants which reside within the demesne of the regal oak, from whom these insect republicans may be said to levy contributions, not only

* *Cicada aurita*.

by excavating his trunk to form their abodes, but by also appropriating the honey-dew with which his leaves are "sprint." The latter may also be considered as affording pasture for the Ant's "Aphis cattle."* Of these more than one breed are to be found, at all seasons, on the oak; but the most distinguished and distinguishable is the large brown, remarkable for size and for a sucker of prodigious length.

A single oak-bough will often present to our view an universe of insect worlds in the numerous galls on leaf, stem, and catkin, differing in size and form, but all produced (as we have seen already) by the puncture of a little fly.

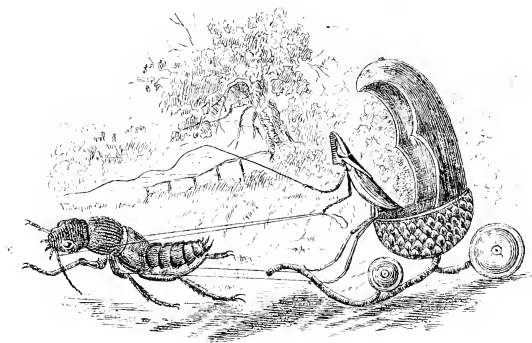
Even the acorn has its peculiar and appropriate insect; each lichen, moss, and fungus—oak derived—swarms with its insect denizens; while the oak-supported ivy is the grand resort, especially in autumn, of innumerable flies and bees, which, when scarcely another flower is remaining, find food in its honeyed blossoms and shelter under its glazed foliage.

In our most imperfect review of the insect tribes, which depend for their all of life and enjoyment on the oak, one can hardly help being reminded of other orders of being more or less indebted to the same vegetable benefactor—even from man, who building house and ship with oaken timber, is assisted to perpetuate his thoughts by *oaken* and *insect* galls—to the bird who, building his eyry on oaken branches, derives a

* Aphis of the Oak.

part of her support from oak-residing insects, and, by dropping the acorns, helps, in return, to extend the race of her protecting and supporting tree.

Who can consider these things and not look up with double admiration to the monarch of the forest? And where better than in his sylvan courts can we offer our adoration due to the Monarch of Creation? For where else shall we be surrounded with instances more clear and beautiful of that excellent order, whereby, in the bond of mutual uses, he links together the kingdoms and subjects of His boundless reign?



Even the Acorn has its appropriator



A FEW FRIENDS OF OUR SUMMER GLADNESS.

“See her bright robes the butterfly unfold,
Broke from her wintry tomb in prime of May.”

LET us fill up our slight sketch of “Butterflies in general” by a few outlines of the chief among their tribes, which are native to our island.

In our winter’s pursuit of “Life in Death,” we have adverted already to the hardy few (survivors of the fugacious many), which are accustomed to resort in autumn to some snug recess, fold their wings, wrap round them their cloaks of torpor, and thus, “taking no note of time,” to await the

spring, unless allured by the wintry sunshine to pay us a few unseasonable, but ever welcome, visits. Among these, the little "Tortoise-shell," and the beautiful "Peacock," of whom more by and bye, are the intrepid pair which most often gladden and surprise us in the time of yellow aconites and Christmas roses; but after these, we may be on the watch, towards the end of February, or on the first gentle mornings of early March, for a flutterer more welcome still, as the herald of a real and no fictitious spring. This is the "Brimstone Butterfly,"* which, gaily painted,

"Soon
Explores awhile the tepid noon,
And fondly trusts its tender dyes
To fickle suns and flattering skies."

It has been supposed by some that this early visitant (also a late one) is, like the above, a winter survivor; but from the trim of his yellow robes, usually so fresh and glossy, it would seem more likely that, instead of being laid up—not "in lavender," but, perhaps, in ivy—they are of the newest spring fashion. Be this as it may, he is the very pink, or, as he has been more properly considered, the very primrose of Papillons, sometimes to be seen, like a living shadow of the primrose's self, fluttering beside it in the sunny hedge-row or the sheltered copse. We may know him by the cut of his bright sulphur-coloured pinions—each, instead of being rounded, ending in a smooth tail-like angle. †

* *Gonopteryx Ramni*.

† For figures of nearly all the Butterflies here mentioned, see Vignette, or Frontispiece to vol. i.

Of all the wings of all the butterflies, these bear, perhaps, the closest similitude to floral productions, and on each, as if to perfect the resemblance of their delicate flower-like colouring, is a reddish spot, an exact copy of that often produced by decay or accident, on the surface of a yellow petal. In the beautiful raised veining of their reverse, the pinions of the "Brimstone" are no less correspondent with the same; but those of the female which, instead of yellow, are of a greenish white, resemble, perhaps yet more nearly, the leaf of a poplar on its under side. The dye of the antennæ—that purplish pink, so frequent upon tender leaf and flower stems,—also the clothing of the body—a soft, satiny down, like that by which stalks and seed-pods are so often invested, are all alike accordant with the floral character of this most elegant flutterer of the spring. This pretty butterfly comes of a pretty caterpillar, with a smooth, green coat, dotted or shagreened with black, and marked by a whitish line along the back and sides. It is said to feed usually on the leaves of buckthorn and alder.

The term *Papilio*, which was used by Linnæus to designate all diurnal or day-flying *Lepidopteræ*, has now become much restricted, including, amongst a company of brilliant foreigners, only one or two native species.

Of the latter is the "Swallow Tail,"* a beautiful insect, approaching more nearly to some of the tropic butterflies, both in

* *Papilio Machaon*.

form and colouring, than any others which our island produces. Perhaps, in favour of its richer painting, we ought to have given it the precedence usually assigned it over our favourite Brimstone, with all its simple elegance ; but besides being of later, it is also of more rare appearance, and we have a preference always for bespeaking attention to the beautiful things that are most common, rather than to those which cross our path less often. If, however, that path should lead us through the counties of Hampshire, Middlesex, Cambridge, or Norfolk, we are not unlikely, from May to August, to meet the Swallow Tail ; and he is a *Papilio*, we can tell you, much too distinguished to pass by unrecognised, if we can possibly prevent his cutting, at once, the air and our acquaintance.

Compared with the Brimstone he is truly a magnificent bashaw ; but then, in the place of *four*, he can only boast himself of a *pair* of tails, of a peculiar fashion, appended to his hinder wings, which are scalloped, and adorned each with a red, eye-like spot, their prevailing colours being, like the anterior ones, black and yellow—a fitting case for the unfolding, while latent, of so much beauty. The caterpillar of the Swallow Tail Butterfly is one of the handsomest of its race. It has a smooth skin, beautifully variegated with black and green, and carries, at the back of its head, a badge of distinction, not however always visible, in the shape of a flexible horn, forked like the letter γ , which, contrary to the usage of the snail, it is said to put forth on occasions of alarm. It is a

feeder on umbelliferous plants, chiefly the carrot, wild and cultivated, from whence it has acquired, in France, the name of "Le grand Carottier." Of another genus, with hinder wings, rounded instead of angular, or tailed, is the pretty butterfly known as the "Clouded Yellow."* In England, however, it is known but partially, appearing only in certain seasons, and then chiefly on the coasts of Kent, Sussex, and Suffolk. As its name imports, the prevailing hue of its wings is yellow, clouded towards their outer edge with black. The caterpillar, green with white lines, is said to feed upon leguminous plants, though the perfect insect delights chiefly in the flowers of the thistle.

Coming out with the flowers of May, and almost as abundant, are the pale-winged Butterflies, which, like bebies of white-robed damsels, usher in the summer. From whence have they issued forth? 'Tis almost a pity that, as insect genealogists, we must trace their origin, and confess the most of them to have been

"Born in a 'cabbage,' in a 'cabbage' bred"—

and that they have come, therefore, from purlieus—the walls—most likely of the kitchen garden. But what matters it whence they sprang, or whence they came, since they have left behind them, buried in the hearts of kale, or transferred therewith to

* *Colias edusa*.

cabbage-feeders of another sort, the vulgar tastes which belonged to their caterpillar birth? The fragrant meadow, the sunny hedgerow, the gay parterre, now constitute their range,—their meat is honey, washed down by pearly dew-drops. These are the butterflies of the genus *Pontia*, known universally as the common white—so universally, that description is hardly needed for their general recognition, though requisite enough for distinction of their several (as many as about seven) species. At the head of these is placed, usually, the large “Cabbage White”* of the garden, with yellowish mealy wings, the foremost nearly triangular, the hindmost rounded, and as if sprinkled with grey towards the body. The anterior pair, both of male and female, are tipped with black; but those of the latter are marked, each with two black spots, wanting in the pinions of the former. The caterpillar of this primary *Pontia* is that devouring familiar of the potager, to which gardeners, sparrows, and Ichneumon flies require not a word of introduction; but on account of others, who, for the sake of the butterfly, may desire to make its acquaintance, we may just notice that its general hue is bluish-grey, spotted with black, besprinkled with short hairs, and marked by a yellow line along the back with one on either side.

Also of the *Pontia* genus there are the “Little Whites”†—come of little green caterpillars (the French *Vers du Cœur*), feeders on cabbage-hearts—the “Green-veined Whites”—so

* *Pontia Brassica*.

† *Pontia Brassicæ*.

called from the nervures of their wings being marked on the underside with dusky-green—and the large “Hawthorn Butterfly,” or “Black-veined White.”* The latter is a handsome insect, with semi-transparent cream-white wings, strongly veined with black.

The pretty “Orange-Tip,” or “Lady of the Woods,”† is likewise of the cabbage family. In its *green* youth it is a feeder also upon rape, cabbage, and other cruciform plants; but this, while a *cater*-pillar, is no *pillager* of *cates* of culture, preferring the vegetable in its wild growth—a taste more accordant, certainly, with the habits of its maturity and the favourite spots—such as open glades, and lawns, and woodlands, whither it delights to fly, a-Maying. Though we are accustomed to designate this darling of the summer as the “Orange-Tip” and “The Lady of the Woods,” these epithets, applied in conjunction, or indifferently, are not by any means of correct application, seeing that with these butterflies it is the *lord* only of the *lady*, whose white pinions, besides bearing a black crescent, are adorned by the patch of deep orange, which makes the title of “Orange-Tip” befitting to him alone—in both himself and partner the wings on their reverse are beautifully variegated in white and green.

A few words now for a singular and beautiful tribe of Butterflies, whose greatest beauty, however, like that of the wood

* *Pontia*, or *Pieris Crataegi*.

† *Pontia Cardamines*.

violet (on which in some species their caterpillars feed) is usually overlooked, because usually concealed. Nature has been said, in the wings of Butterflies, to have painted her canvas on both sides;—so she has; but it is on the upper one, though often not more delicately pencilled than the lower, that she is accustomed to display the most brilliant and effective colouring. It is otherwise, however, with the majority of the genus *Argynis*, comprising the richest and largest of the butterflies, called “Fritillaries,”* reddish brown and black, disposed in regular streaks or chequers, something resembling the Fritillary or chequered daffodil, comprises nearly their whole of outward bravery; but on the reverse of their ample scalloped wings there is abundance of rich adornment.

There is the “Dark Green Fritillary,”† with sober-suited pinions, black and brown; but their linings are golden green, studded and bordered with spots of silver. And, again, there is that Paphian Fritillary, known as the “Silver-Washed.”‡ Even in her exterior painting, black and orange, she is more lively than the last; but is only seen in all her splendour, when, folding her wings, she invites the sunshine to play upon the silvery streaks and golden green which ornament their under surface.

These, which are the most beautiful, are also the most common of the British Fritillaries, being met with in most parts of

* *G. Argynis*.

† *Argynis Aglaia*.

‡ *Argynis Paphia*.

England—in woods and meadows, heaths and downs—during the months of June and July. Their caterpillars, which are spiny, feed mostly on the dog-violet and raspberry.

The Fritillaries have a distinctive though not peculiar mark, in the shortness and seeming imperfection of their foremost pair of legs, which are not usable for walking.

We come now to the fan-winged genus *Vanessa*, comprising some of our commonest, but also most beautiful and richly-coloured, Butterflies—all, like the last, with the fore-legs imperfect. Among these is the little “Tortoise-shell,”* noticed already as a survivor of, and occasional visiter in, winter. It derives its name from its orange black-spotted wings, margined by a border of blue-crescents, and thickly furred at their base with golden hair, which also covering the body, helps, doubtless, to protect it when exposed to frost. This butterfly is among those which are called double-brooded, one set of eggs being hatched in spring, the other towards autumn, of which latter families are the winter survivors.

The caterpillars are greenish black, with yellow stripes, and spiny, like the nettle on which they feed; while young, in large societies, which afterwards disperse. The “Great Tortoise-shell,” or “Elm Butterfly,” is much larger, and less common than the above.

* *Vanessa Urticæ*.

A glorious insect of the same tribe is the *Vanessa Io*, or "Peacock's Eye." Its prevailing hue is a rich brown red, inclining to purple, each wing being adorned by a large eye or ocellus, with a dark pupil, margined by a crescent or semi-circle of blue and yellow.

The caterpillar, which is shining black, studded with white points, is, like the last, a feeder on the nettle, and is found, commonly in July, throughout the south of England. An old naturalist styles this Io-Butterfly, the *Omnium Regina*, and she well deserves the title. The above is an autumn Butterfly, and so also is the *Vanessa Atalanta*, known, likewise, as the "Alderman," the "Admiral," and the "Admirable;*"—and admirable truly are "the colours" displayed by this "Admiral of the Red," as he proudly unfurls them in the August or September sun, and challenges the autumn flowers to eclipse his glory. Nor is there one among them—neither velvet dahlia, nor golden mary-flower, nor many-coloured aster, which can boast of hues at once so rich and varied. The deep black of his upper wings is enlivened by a broad cross band of brilliant scarlet, white spots, and a scalloped edging of the same; while on the secondary pinions the scarlet, which instead of a bar forms a border, is enriched by a line of black spots, a black and white scalloped edging, and a small blue crescent at the inner extremity of both wings. Their

* Vignette to Butterflies in General, Vol. i.

under surface, if less rich, is even more varied in colour, and more finely pencilled than the upper.

The caterpillar of this beautiful insect, which is greenish black and spiny, is a solitary feeder on the nettle, found not uncommonly in July and August. By means of a silken thread he draws together, edge to edge, a single leaf, out of which he thus forms himself a temporary tent or case, with openings at either end which go on widening before the jaws of its occupant. When he has thus fairly "ate himself out of house and home," he betakes himself to another leafy abode of similar construction. This "Alderman" caterpillar is found sometimes feasting on the seeds of the nettle; but still under cover of the upper leaves.

Closely allied to this beautiful genus *Vanessa*, though belonging to that of *Cynthia*, is the "Painted Lady,"* or "Belle Dame," a butterfly, as its name imports, of exceeding elegance. Its upper wings, brown towards the base, and redder towards the middle, are variegated and tipped with black, and marked at the apex with a spot of white.

In some seasons our "Painted Ladies" are abundant, in others scarce; but of all the *Lepidoptera*, these are considered to have the widest geographical range, having been seen in America, Africa, and Asia, also frequently out at sea. Their caterpillars are feeders chiefly on the great spear-thistle, whose

* *Cynthia Cardui*.

unmanageable leaves they yet manage not only to eat but also to roll, as well as those of the nettle and other spiny vegetables.

Of the following genus, *Apatura*, is the "Purple Emperor of the Woods,"* well worthy of the title in favour of his regal attire, as well as his soaring pride of station and of flight. Though his reign in the south of England is not unfrequent, he is rarely captured, because it is seldom that he lowers his course sufficiently for the crossing of our humble paths. Making at once a throne and footstool of the oak tree's "leafy crown," he thence laughs in scorn at the anxious up-turned face of baffled entomologist. Then, taking to a rapid bird-like flight, he soars disdainfully above the gauzy hand-net, which, though attached sometimes to a handle of thirty feet, expressly for his capture, is often lowered in despair, as the free-born monarch of the woods rises in unheeding progress through the blaze of a July sun. When, however, he is surprised by accident, within our reach, he is equally distinguished by that bold and lofty bearing which becomes his rank, and, from disdaining to show the alarm of meaner insects, sometimes graces (a sacrifice to his own courage) the triumph of the proud collector.

We have spoken already of the Emperor's voluntary flights towards the source of day, which, lowered with the descending luminary, are said usually to carry him by four o'clock (p. m.)

* *Apatura Iris*.

down to his leafy throne beside his empress. She, poor lady! has been left at home the live-long morning—how employed we know not,—perhaps by turns sipping her acorn cups of honey-dew—by turns reposing, and by turns watching through her argus optics—tinged, may be, with Love's rosy hue, jaundiced, may be, with a shade of jealousy—the progress of her royal spouse, as much at least of it as she may be able to discern.

The upper wings of this most regal insect are rich brown, changing with the light to a bright blue purple, or more properly seeming, as they have been well described, to emit fitful flashes of this brilliant hue. They are also enlivened by four patches of white, the secondary pinions being adorned near their margin each with a black spot, surrounded by a red circle.

The empress of this imperial butterfly, more sober in attire, as well as more sedate in habits than her lord, displays no purple in her deep brown wings, and keeps, as we have seen, her solitary court upon the oak tree, whilst her royal partner is engaged in pastime, or in fighting (as is his frequent wont) with his brother potentates of air.

For the more lofty and more frequent flights of the Purple Emperor, as compared with those of his empress, a physical cause has been assigned, existing, it is said, in his peculiar possession of a strong elastic spring, so contrived as to give additional power to his nervous wings.

Even in its estate of caterpillar, the *Apatura Iris* is a distinguished insect,—distinguished by a pair of horns, and by the oblique stripes of yellow which lace his green doublet. By good luck, or good looking for, we may light upon him, in the month of May, in feeding “for the Purple,” either on his own royal oak, or on the broad-leaved sallow.

We have extolled already the glories of that beautiful *Vanessa*, called the “Admiral of the Red;” nor must we overpass entirely the less showy endowments of the “Admiral of the White,”* standing alone, we believe, in another division. He displays no gorgeous colours—none more brilliant than bars, and spots of white and sable, in a field of brown; nor has he gained celebrity in fight, though, for his sailing *flights*—his graceful evolutions on the ocean of air—he has been pronounced without a rival.

It is related by Mr. Haworth, that an old aurelian of London was so enraptured with the elegance of this butterfly’s mode of flight, that long after he was able to pursue it he used to go to the woods, and sit down on a stile, for the sole purpose of feasting his eyes on its fascinating movements. The caterpillar is a feeder on the honeysuckle.

In the genus known to naturalists as that of *Hipparchia*, we have another of the butterfly tribes, more distinguished for

* *Limenites Camilla*.

sombre than for lively colouring. Their caterpillars, usually green, with forked tails, assimilate with the various grasses on which they feed; and even when arrayed in winged attire. their prevailing shades of brown and orange bear still a degree of correspondence with the hues of the ripened and sun-burnt clothing of their favourite localities, the meadow and the heath.

Amongst other species, not rare, the most common of this brown brotherhood, perhaps, of all the race of butterflies, excepting the Cabbage Whites, is the "Meadow Brown."* The wings of the male are of a uniform blackish brown, enlivened by a small black eye with a white pupil. Beneath this ocellus there is in those of the female a large irregular patch of orange buff, and all her pinions are more prettily, and somewhat more gaily, painted on their under than their upper sides; the foremost with dark orange, the hindmost with shades of light brown. This "Brown," of the Meadow is the hardy flutterer noticed by Mr. Knapp, as being, of all its race, the most indifferent to weather. On the most damp and cheerless of summer days, it is seen, he says, in every transient gleam, drying its wings, and tripping from flower to flower, left seemingly the sole possessor of their sweets. This, as well as the rest of its genus, comprising, among others, the "Heath" Butterfly and the "Ringlet," have the fore legs very short.

* *Hipparchia Janira*.

According to their usual arrangement, we come now to that assemblage of pretty little butterflies, of the genus *Theckla*, known to collectors as the "Hair-Streaks."* They are so called from the fine hair-like lines streaking the under side of their wings, of which the hindmost pair are further distinguished by one or two tail-like appendages. The caterpillars of these little butterflies which feed on trees and shrubs—never on herbaceous plants—might hardly be taken, save by the entomologist, for caterpillars at all, being of an oval depressed shape, resembling very nearly that of wood-lice, and are hence called onisciform.

The prettiest of our Hair-streaks, the "Purple,"† is also the most common, being found, it is said, in almost every wood of oak, whereon its caterpillar, a greyish brown onisciform sluggish creature, is to be sought for in the month of June.

Contrary to the habit of the Emperor of the woods, the lady of this little lord of the oak has been said *alone* to wear the purple. She displays it, indeed, far more conspicuously in a broad irregular patch of Tyrian dye, in the centre of her brown bordered upper wings; but those of her spouse, though on first-sight wholly brown, are not without their purple also, when viewed in a proper light.

In the genus *Lycaena*, we have, fresh from the mint of nature, that bright coinage of meadow butterflies, y'clept the

* *G. Theckla*.

† *Theckla Quercus*.

“Coppers.”* Of these the most common, also the smallest, is a splendid little flutterer,† with the primary wings of red metallic lustre, spotted and bordered with deep black; the secondary, brown and black, margined by a coppery band—encountered not unfrequently, early in the summer, also in August. This is the little Copper Captain, the fiery Mars of his radiant tribe, so renowned for making war upon his own kindred, and even daring to engage with antagonists of twice his bulk, but without his metal. The caterpillar of this most common of the Coppers, is greenish yellow, onisciform, and, like the majority of those belonging to its tribe, it is a feeder upon sorrel and other herbs of the field.

Contrasted with the Metallic Coppers, and often seen side by side, are the “Aerial Blues.”‡ These are the little blue butterflies, which, loving to disport over the thymy down, the grassy glade, and flowering meadow, do literally “paint them with their own delight.” Now, rising in sportive pairs or trios, they enliven the fragrant air. Now, basking on the yellow buttercups, or chalk-sprung flowers of their own colour, they reflect, in the hues of their expanded wings, every tint of the summer sky, from deep, deep blue to lightest azure, or the glowing lilac, which precedes the sun-set red; while ever and anon, closing their pinions, and opening thereby the

* *G. Lycaena*.

† Vignette to Butterflies in General.

‡ *G. Polyommatus*.

many eyes which bestud their under surface, they seem to look out in smiling happiness at the beautiful things around them. These belong to the genus *Polyommatus*, from Greek words expressive of the many eyes, or eye-like spots which adorn, as just noticed, the reverse side of their blue or brown wings.

One of the commonest of these lovely little creatures, is the Argus, or Alexis,* with plain cut wings of splendid blue changing to lilac, bordered with black, and fringed with silky white; on this under surface they are grey, with oscillated spots. The female of this species, like those of several others of the same genus, is by no means so splendidly attired, her more sober pinions being brown, bordered, however, by bluish spots, and ocellated on their reverse. Being one of the double-brooded, there are two seasons, May and August, which in most places afford frequent opportunities—

“O'er the bladed mead to chase
This blue-winged butterfly.”

Its caterpillar (which like most of those belonging both to the “Coppers” and the “Blues,” is of the *onisciform* or wood-louse shape), is bright green, with rows of yellow spots, and may be found, in April and July, feeding on various grasses, lucerne, and the wild strawberry.

There is another larger and beautiful species of blue butterfly,† with black bordered wings of silvery azure, and the usual

* *Polyommatus Alexis*.

† *P. Corydon*.

ocellated spots, which delights in chalky districts, abounding in blue flowers, and fragrant with the wild thyme, on which its caterpillar feeds. This is the blue "Corydon,"—a shepherd flutterer, wooing his *brown* Phillis over the Upland Downs.

Most people, however little they may know in general of insect forms, are able at once to tell a butterfly from a moth. There is, however, a very distinct family of *Lepidoptera*, called *Hesperiidæ*,* the members of which, displaying certain features which belong to butterflies with others which appertain to moths, would puzzle any but an entomologist to say to which of these grand divisions they belong. Their most proper place would seem between the two, of which they have been considered the connecting link; but, as with butterflies they are usually classed, our brief notices of the chief among our British *Day-fliers* would be more imperfect than they are, without mention, in conclusion, of these Hesperian fliers of the evening, which are, however, fliers also of the day.

Butterflies—when taking their repose, or resting in that dubious state described by the poet, when he says—

"I've watched you now one short half-hour,
Self-poised upon that yellow flower,
And, little butterfly, indeed
I know not if you sleep or feed"—

are accustomed to have both pairs of wings perpendicularly folded. Moths, on the contrary, rest usually with them all

* Skippers.

open; but some of our *Hesperidæ*, following a sort of intermediate habit, repose with their foremost pinions closed and directed upwards, while the hindmost are open and divergent.

Their mode of transit from flower to flower, or from branch to branch, whereon they are continually settling, is as peculiar as their manner of resting: being performed by short, rapid, jerking flights, from which they have acquired the name of "Skippers." In their large heads and robust shoulders, they assimilate to moths; while in their clubbed and sometimes hooked antennæ, they approach to butterflies. Amongst the latter Linnæus placed them; but, from their wide divergence from the usual *papilionaceous* type—their inferior elegance of form and flight—their lesser size, and sober colouring, usually brown and orange tawny—he has assigned them a station at the bottom of butterfly society, where they figure meanly as his *Plebeiî urbicoli*. Many of the tropical species cut, however, anything but a mean figure, being adorned with pellucid spots and sporting tails of an imposing length.

Of our British *Hesperidæ*, the most common is the larger Skipper,* common in woods and lanes from May to August, with variegated wings of brown and orange tawny, the foremost pair on the under side yellow, inclining at the tip to green, and all plainly fringed.

* *Pamphila sylvanus*.

The "Grizzled Skipper,"* also a common species in woods and pastures, has upper wings of dark brown, enlivened by squarish spots of cream or straw colour: the hinder pair prettily variegated, and all edged by a fringe of alternate black and white. The caterpillar of this, as well as of some other species, is a leaf-roller, the teasle being the apparently uninviting plant which, nevertheless, affords him board and lodging. Others of the *Hesperidæ* feed, in their caterpillar infancy, on other low plants and grasses. In their partial habits of leaf-rolling, (as well as their enclosure, for transformation, in slight cocoons), they approach the moth, and diverge from the butterfly.

Till within comparatively recent years moths were included even by entomologists under the general denomination of BUTTERFLIES—of the day and of the night. Reaumur, describing the "Death's-head Sphinx," calls it the "Skull Butterfly." The "Oak-lappet," or, as he designates it, "Le Pacquet de feuilles seches"—bundle of dry leaves—is spoken of as a butterfly also; and we are told of others (smallest of butterflies, properly moths), not exceeding in magnitude the size of a small fly, the caterpillars of which spend their life's total, with its triple changes, on the leaves of the small "Celandine,"—Wordsworth's sylvan favourite of the spring. Nothing indeed can be more defective, as to arrangement and nomenclature, than the entomological works of the last century,—the detailed accuracy (for the most part) of their description,

* *Pyrgus Malææ*.

those especially of Reaumur, alone enabling us to recognise the thing described. The field of insect research, some fifty years ago, was like a country rich in beautiful and interesting objects, of which even their admirer could gain but confused notions for want of guides and beaten paths. The amateur collector even of butterflies then found it less difficult to capture than to name and arrange them: but now, *tout cela est changé*, and by a variety of works,* some as elegant nearly as the creatures they describe, we are invited and assisted to improve our intimacy with these most fascinating "Friends of our Summer Gladness."

* To name a few of the best modern helps to butterfly collecting—Jermyn, Haworth, Lewin.



"Sipping their cups of dew."



LE LUCCIOLE.

A MIDSUMMER TALE.

———“Winged stars, pale in the moonshine;
But under the dark trees a little sun
A meteor tamed——”

ON Midsummer Eve, or the Eve of St. John (1679), the palaces and hovels of *Genoa la Superba* were illuminated in honour of the Baptist by an artificial blaze, contrasted with which the lamps of nature looked cold and dim. Yet nowhere are summer evenings more brilliantly lit up than on the shores which bound the Gulf of Genoa; for, besides the “rulers of the night,” robed in the clearest of nocturnal

blue, and shining forth in regal splendour, there are stars of the earth—radiant galaxies of Italian fire-flies, which, rising from the low underwood, or falling from the lofty trees, shoot through the air in scintillating streams of living light.

Away from the glare of the city, and from its noisy revelry which rose at intervals on their unheeding ears, a youth and maiden were wandering in the garden of one of those villa palaces then numerous on the outskirts of Genoa. They were, of course, lovers ; for none others, so near their scene, would have been absent from that evening's festivities. The figure of the young man was commanding, and correspondent with his dress, which bespoke him to be of noble rank. His features also were of uncommon beauty ; but an eye, well versed in the lines of character, might have detected about them a certain expression of weakness—a wandering of the eye, and an effeminate softness of the mouth, which gave suspicion of the like defects of disposition ; and one, certainly, who should have so read his countenance would not have very greatly wronged the character of young Marco, only son to the Marchese Basano, owner of the stately villa, in the grounds of which he and his companion wandered. The latter was a fair girl—a fair Italian—with eyes deeply blue, like her native skies, and rich brown hair which seemed to have stolen of its golden gleams. She was this, and more ; but she was not, like her lover, of patrician birth, and her lowly rank was indicated both by her peasant's dress and the air of simplicity ; yet, withal,

of gentle grace, with which she wore it. The converse of Marco and his sweet Bianca was so low as to be nearly overpowered even by the gentle murmur of the sea, as it broke upon the adjacent shore, and the slight stirring of the surrounding foliage; while, at intervals, their voices were wholly drowned by the shouts of revelry which rose from the illumined city. Since, however, the purport of their discourse may be readily surmised, it is not worth our rescue from the orange-scented air to which it was committed, and the words of Marco were all the less deserving record, because, though soft and gentle as the waves upon that summer night, they partook somewhat also of that beguiling smoothness by which many a fair and fragile barque had been lured to ruin in the gulf below. Not that Marco was one of your cold calculating deceivers; but he was a creature almost as dangerous: he was not recklessly false-hearted, but he was infirm of purpose—the sport of impulses which had been of late vacillating between his love for Bianca—certainly the most ardent of his present feelings—and his love of family consequence,—perhaps of all his characteristics the least unsteady.

Heard clearly above the mingled sounds rising from the city, the clock of the Annunciata struck nine. It was a signal for the pair to separate—Marco to join a party of gay companions at the festival—Bianca to return to the abode of her father, and old vine-dresser, who had lived from his youth upwards on the estate and in the service of the Marchese

Bassano. His cottage was in the midst of an olive grove, which adjoined the garden of the villa, and communicated with it by a gate opening on a terrace walk which overlooked the sea and town. It was here the lovers had been walking; and Marco, having accompanied his innamorata through a portion of the olive grove, they were repeating for the last (perhaps the twentieth) time, their reluctant "*Buona notte*," when Bianca started—"Heard you not," said she, "a rustling amongst those trees?"

"Not I, sweet one," returned Marco;—but as he spoke he plunged into the plantation in the direction towards which she pointed, and shook the boughs as if to detect the presence of a suspected lurker. None appeared; but from the shaken branches arose a swarm of fire-flies which, checked in their upward flight by the thick foliage above them, kept wheeling in radiant streams and circles near the disturbers of their rest. "There, silly one! now art thou satisfied?" cried the young man, returning to the pathway. "The *Lucciole* have displayed their lamps on purpose to show thee the emptiness of thy fears; and see! in honour of St. John, have we not here a brave illumination?—a show of fire-works shaming the brightest that are let off yonder? Aye, and my loved one, thou shalt not want for diamonds in thy hair—gems which the proudest of yon city dames display not one to equal."

Marco, as he spoke, opened and closed his hand upon seve-

ral of the fire-flies which were flitting around him, and sportively placed them in the coloured net-work which confined the maiden's luxuriant tresses. Bianca shrunk—almost shrieked—as she tried to arrest the playful action of her noble lover. “Marco! for the love of heaven, do not so? Those *Lucciòle*—if you knew how I dread them!”

“Dread them?”

“Yes; bright as they look, they come from the dark graves; and with us, in our family, they have always been omens—warnings of death and dolor. Before my poor mother died”——

“Nay, nay,” cried Marco; “now art thou more silly than I deemed thee.”

Yet he strove, at the same time, to remove the glittering causes of alarm. When with some trouble he had disengaged them from the net-work, one yet clung to his hand, and, on shaking it off into the air, the insect, as if proud of the place it had lately occupied, instead of joining its companions, flew back, and settled on Bianca's head. Not a word, this time, escaped her lips; but she turned pale and trembled. Her lover again gently chid her—again displaced the *Lucciola*, and threw it far into the underwood. Then, supporting the steps of the frightened girl, accompanied her to within a few paces of her father's cottage, once more whispered his tender “*Buona Notte*,” and departed to join in the revels of the night—prolonged far into the morning.

Bianca's father, who only thought (poor old man) that she had been out to look at the fireworks, did not observe her agitation and unwonted paleness. Parent and child, their evening prayers having been, as usual, offered up together, soon sought their humble pillows; but when sleep, long absent, weighed down the maiden's eye-lids, visions of terror haunted her slumbers. These were at one moment clear and defined, the next dim and indistinct; but all seemed rendered visible by the wavering, scintillating light of the fatal *Lucciole*, which themselves appeared ever and anon to assume gigantic size, and to put on human faces, once known to the beautiful dreamer, but long since numbered with the dead.

We may here observe, that Bianca's superstitious dread of the fire-flies, and her belief that they were animated by departed souls, were not peculiar to herself, but entertained in common with the peasantry of her country, though the prevalent notions were in her case strengthened by some legendary tale which ran current in her family.

* * * * *

Twelve months had brought round another Eve of St. John, and brought with it, and on just such a summer night, the like festivities—the like illuminations.

Had the year been productive of as little change to our high-born youth and low-born maiden? To Bianca, the proud noble, who should have been as nothing, was, in womanly devotion, still *everything*. Yet had he become an *everything*

which she was now required, and, in womanly disinterestedness, was ready to resign.

And Marco? Why, he still loved the peasant girl, as well, perhaps, as ever—as well as a young patrician (though sprung of merchant princes) might. His heart, such as it was, was still Bianca's; but his hand, in accordance with the desire and policy of his father, had been for many months pledged, and in a few days was to be given, to the beautiful and haughty Beatrice, a daughter of no meaner house than that of Doria. With this purposed alliance, long known to all Genoa, Bianca was of course acquainted. It was a finale to her misplaced affection only such as might always, sooner or later, have been looked for, and neither resentment nor jealousy embittered the dispensation under which she meekly bowed, as the just and inevitable penalty of her having dared to love before she knew the meaning of either love or rank. In one respect, however, the poor peasant girl was not wanting in strength and dignity; for she had firmly avoided, not in wounded pride, but in proud yet penitent principle, all interviews with her noble lover, since she had become acquainted with his purposed marriage. But he had still urged her seeing him, and had even contrived means of assuring her, that necessity, not choice, had driven him to a union of policy, which need not, he signified, interfere with one of love. His words of mockery Bianca had committed unanswered to the flames, with a cheek as glowing as the fire which consumed them. Whether it were easy or other-

wise to banish their unworthy writer from her heart—easy it was *not* for the poor vine-dresser's daughter to banish her young *master* at all times from her sight. And here was the misery, if nothing worse, to live, as heretofore, within the very shadow of the house, which was to be the future residence of Marco and his bride, who were to abide at the Palazzo of the former's father. How often had Bianca wished that she could flee to some distant land, where, as she fondly but deceptively believed, that if she could never quite forget him, she might sometimes think of him without offence.

Before the arrival of the present Midsummer, this, her desire, seemed likely of fulfilment. Whether the old Marquis had suspected something of the attachment, commenced almost in childhood, between his son and Bianca, and thought that the latter would now, therefore, be better at a distance; or whether it were mere accident that favoured her wish; but so it was, that the Marquis having recently (as was a common custom with the Genoese nobility) purchased an estate in the more fruitful territory of Naples, proposed to the old vine-dresser that he should take the office of its superintendency. The faithful servant, who would not for promotion have left his "own people," but to whom his master's will was law, urged moreover by his daughter, agreed to the proposal, and they were to sail together for their new southern home in a galley now at anchor in the bay. This was one of a little fleet, the poor remainder of that mighty merchant squadron

which had once proudly swept the Mediterranean, mastered its islands, and gained triumphs upon half its shores; but which was now employed, chiefly, to fetch corn and wine, or for purposes of pleasure. On the Midsummer morrow the old man and his child were to depart. This was the last Eve of St. John—the last eve of any they were to spend in the land of their birth.

Old Jacopo was sad, as the remembrances, both pleasant and painful, of sixty years, all passed under that humble roof, came back, like a mingled company of departed spirits, and seemed to take possession of every corner—every bit of furniture in the cottage,—all, with itself, to be left behind. He almost felt as if he were about to part with everything he loved—even his darling child—though she was to be the companion of his exile. Not only was he sad, but also weary with preparations for departure; and that he might be all the fresher for the morrow, Bianca persuaded him (after one last look from between the olive trees at the illuminated city, and after they had offered up together their evening orisons), to repair early to his bed. With one hand clasped in his, she sat beside him, till he fell into a quiet sleep; then kneeling by the bedside implored the Divine blessing on their morrow's voyage, and the change it was to bring them; and she prayed, also, that no guilty repinings—no vain regrets—connected with one left behind, should ever disincline her to the cheerful performance of her duties, those especially she owed to him, her

her kind old father. On rising, she gently kissed his forehead, and treading lightly, left the chamber, meaning presently to seek her own.

Ah, Bianca! which of the sweet enticements of that Midsummer night could break thy purpose, and lure thee to go forth? Was it the evening breeze whispering among the trees close by, or the distant murmur of the placid sea? Was it the breath of the evening-scented flowers, or the shouts of revelry rising from the illumined city? It was none of these; but it was an impulse, sudden, irresistible, which urged her to take one last, one little look at that dear garden, where she had been used to play, and not alone always, in her childhood. From the garden three minutes would take her through the olive grove, and give her a parting glimpse—just only one—of the terrace walk beyond,—that walk connected with remembrances more recent and more dear than all. But one thought made her hesitate,—might she not meet him? Oh no. There was that night, at the Palazzo of the Marchese, a grand masked ball in honour of the evening's festival, and also of the approaching bridal. The ducal family of Doria was to be among the guests. Beatrice—in all the blaze of jewels, rank, and beauty—queen of the night,—Marco, her devoted subject, in a day or two to be her lord.

“Oh no,” thought Bianca, as she hastened through the grove; “there's no fear that I shall meet with *him*.”

She found the gate open which led from the olive planta-
VOL. II.—10.

tion into the Palazzo garden, and had only to step at once upon the terrace walk, which lay in the bright moonlight, clear and unoccupied. The maiden advanced a few paces, looked for a moment towards the villa, which was brilliantly illuminated, and as the light streamed through the Piazza could discern figures moving beneath it. But what, to her, was that abode of luxury,—its picture-laden galleries, its gilded halls? what now even *one* amidst the motley throng which filled them? She turned away, and looked towards the sea and the illumined city. To her, little were now its gorgeous palaces, its humble dwellings, its glare, its bustle, its numerous inhabitants,—few of whom she had ever known, and of these not one was she likely to see again.

In all that wide expanse, teeming with life, and now, both on land and sea, more than usually alive, the whole of interest not dead to her, lay centred in the galley intended to convey her on the morrow to another shore. It and its fellow vessels she could plainly discern at anchor in the harbour,—the seamen, in honour of St. John, having hoisted their lamps in aid of the general illumination, while the few left on board uplifted their hoarse voices in alternate hymns and strains less sacred. Bianca, as she looked and listened, was, in fancy, already, with her father, of their company, ploughing the deep blue sea,—away, away from the receding shores of Genoa.

“Bianca—my Bianca!” whispered a well-known voice, and Marco, wearing a Spanish dress and masked, but to her in no

disguise, stood beside her. What could he, the young patrician, the affianced, well nigh the wedded husband of a fitting bride, have now to say to her, the foolish maiden of low degree, who had too long listened to his beguiling tales? Why, even at this eleventh hour, he had yet another for her ear—a tale of love and seeming madness. He had stolen away, he said, from yonder brilliant company,—from Beatrice, the brightest of them all, to seek his Bianca, as he had purposed, at her home. *They*, she and her old father, should still sail on the morrow, at early dawn; but *he* would be the companion of their voyage. The captain of the galley should be bribed to convey them not to the Neapolitan estate but a port of France, and there, without a thought of rank, of home, or even of honour forfeited, he would make her his lawful bride.

The maiden heard only to reject the dazzling, dangerous proffer; but Marco still urged; when distant voices were heard shouting out his name, and turning towards the villa they saw several persons issuing from under the piazza, and advancing towards them. “Go, go, Marco! May blessings ever attend thee!” and Bianca, as she spoke, burst from her lover’s detaining grasp, and retreated from the terrace, behind the screen of a tall adjacent shrub. The young man followed for a pace or two, then stopped and hesitated. He distinguished, amongst the approaching voices, that of Pietro Doria, Beatrice’s brother. Do what he might it was as well to save appearances; so with another look towards the spot where

Bianca stood concealed, and with inward maledictions on the noisy group which was drawing near, he turned to meet it. Some of the party had caught a momentary glimpse of a retreating female figure; but the Lady Beatrice, as well as her betrothed, having been missed from the ball-room, it was only supposed that the lovers had stolen from the festive scene for half an hour's converse beneath the gentle moon. Maidenly bashfulness might explain the lady's flight, and her preference for returning to the palazzo alone rather than accompanied by the merry maskers.

Having seen them all re-enter the building, Bianca issued from her covert. As she left the moon-lit terrace, and regained the olive grove, a thrill of terror, sudden as the transition from light to darkness, shot through her frame; her limbs trembled, and she was glad to seek the support of an aged olive, the trunk of which, partially decayed, showed white in the surrounding gloom. Not once that night had she thought of the dreaded *Lucciole*—not one had flitted across her path—but at the moment she touched the olive tree, they fell around her from amongst its foliage in a shower of living sparks.

Well now might the maiden tremble; well might the drops of terror mingle with the night-dews on her marble brow; not for the harmless glitter of the *Lucciole*, but for a glimpse of gleaming, and no fancied horrors, which their light revealed. She saw (for an instant) the sparkling of diamonds amidst raven tresses—the flashing of dark eyes distended with vin-

dictive fury—the glittering of jewels on a white uplifted arm—the gleaming of cold blue steel directed to her heart. In a brief agony of fear she clung to the olive's trunk; in an agony, as brief, of supplication, she raised her mild blue eyes imploring mercy; but mercy there was none in those dark orbs of vengeance which returned their glance. The bright stiletto did not miss its aim, and, clear in the encircling radiance of the *Lucciole*, a crimson stain on the bleached trunk of the olive, showed, even in that place of shade and hour of darkness, that a deed of murder had been done.

Poor Bianca! Then did thy simple superstition seem to have met with terrible fulfilment. The *Lucciole* had come to thee indeed as messengers of death; but in their radiant guise they were the more fitting representatives of ministers of mercy, sent, perhaps, in good time to rescue thee from danger and from sin.

* * * * *

Early next morning the old vine-dresser was up, and dressed, ready for departure. He wondered why Bianca was not stirring too; “but, poor thing!” thought he, “she shall rest as long as may be. Yesterday she had a deal to do, and to-day, parting from the old place, and all about it, will be sad work for both of us, though she (God bless her!) will try hard that I may not see her downcast.”

Jacopo, while this was passing through his mind, busied himself in a few remaining preparations—even got ready

their simple breakfast,—ever and anon, in the midst of his occupations, going to listen at his daughter's chamber door. "How soundly she is sleeping," whispered he; "but hark! there's the Annunciata striking six; we're to be on board by seven; so wake her I must."

He tapped gently—louder—more loudly. "Bianca! Bianca!—wilt thou never awake?"

A death-like silence answered, and something of chilling augury smote upon the old man's heart, even before he opened the door, and saw that the room was tenantless—the bed unruffled.

Then he ran wildly forth—calling as wildly on his child. The early chirp of the birds in the garden and the olive grove was his sole response.

But he soon found her, and he (poor miserable old man!) was soon found with her, sitting under the half-dead olive tree; her head supported on his knees, and he smiling in childish vacuity, as he tried to disengage her luxuriant hair from the clots of blood which confined it.

The father and his child were thus discovered by two mariners, sent by the master of the galley to summon his expected passengers, and assist in taking on board their luggage.

Whilst one of the seamen remained with old Jacopo, who would neither move from the body of his daughter, nor allow it to be touched, the other hastened to the palazzo, with

tidings of the tragic event which had occurred. His tale of horror was related first to the domestics ; but he must see, he said, the Marchese or her son. The former, he was told by the servants, could not be disturbed so early ; but their young master, the Count Marco, had been up, they added, by times,—if, indeed, he had gone to bed at all on the conclusion, at no very early hour of the morning, of the last night's entertainment. One of the servants was about to apprise him of the mariner's business, when Marco himself appeared.

The terror-stricken faces of the seaman's late auditors prepared him for some correspondent recital ; but not for the trembling, agonizing surmises which followed on the man's brief relation ; and when, in a private interview, particulars were detailed which left no doubts, as far at least as concerned the person of the victim, it is difficult to say how the young noble was able (if he did so) to disguise the fearful intensity of his individual interest in that which had befallen.

It is more material to our narrative to notice that the seaman's chief motive for desiring to speak with the masters of the palazzo, was to put into their hands a splendid jewel—a bracelet—which he had picked up, he said, lying close beside the murdered maiden. None of hers (he suspected) could be an ornament so unsuited to her rank and her attire, and it might point to the hand by which she had fallen.

Marco, forcing himself to say something in praise of the mariner's honesty and sagacity, put a gold piece into his hand,

as he received into his own the glittering bauble, on which hung, perhaps, its owner's life; and who that owner was Marco knew well at a single glance. The bracelet was a gift of his own to Beatrice, and her's, beyond a doubt, was the hand which, instigated by jealousy and wounded pride, had plunged the murderous steel into the heart of her humble rival.

She must have seen,—perhaps heard—the purport of his last meeting with Bianca on the terrace, and must have preceded and awaited her victim in the olive grove through which lay her homeward path. All confirmed it;—she had been absent from the ball-room long after he and the party of maskers had returned to it from the garden; and when she re-appeared, he could now remember that her demeanour had been absent, her dark eye restless, her cheek alternately flushed and pallid. And this was the beautiful fiend whom another day would have made his bride; for love, which with the moon had ruled the ascendant on the previous night, had given place with the morning sun to pride, policy, and what he would have called a sense of honour.

In an hour after the mariner had left his father's villa, Marco was closeted at the palazzo Doria with the Duke. Their interview was long; but to the curious eve's-dropper quiet as the grave.

Before sunset, the galley which was to have taken the old man and his daughter had left the Gulf for Naples, with

Marco as its passenger, and, strange as it might seem, the two seamen (who, after the unhappy father, had been the first discoverers of the murder,) had also been permitted to sail without their evidence being taken. Concerning the manner of poor Bianca's death there was of course much talking, much surmise, even a slight mockery of investigation; but the matter was soon hushed up.

Murders at Genoa, if not quite so common as at the rival city Venice, were of no rare occurrence; and the voice, especially of plebeian blood, was too often, as elsewhere, accustomed to cry unheeded from the ground. Nor in the case of Bianca was there any one to sue for the justice not likely to have been obtained; for her old father, her only relative and only friend, was now helpless, almost heedless as a child, and so remained, till, in a few months, he slept beside her. Marco never returned to Genoa, and fell in battle a few years after, having taken service in the army of the French, at that time allies and almost masters of the once proud Republic. And the miserable Beatrice!—what became of her? Never did detected culprit, condemned by man's erring judgment to give up life for life, suffer a penalty so dread as her's. The rank and power which had served to shield her from public condemnation, did not stifle private suspicion: and though to breathe a name like her's in conjunction with a deed of murder, was more, perhaps, than any inhabitant of Genoa, noble or plebeian, would have dared to do, yet on the city walls,

which the Italians, with reference to such a use, have termed proverbially "*Fools Paper*," some daring hand had ventured, in ambiguous but intelligible terms, to write up her accusation.

But what was this to the "hand writing on the wall," which above every festive board, on the frescos of every sparkling saloon, on the tapestry of her own chamber, presented itself in characters of blood before the eye of Beatrice. For a season, and with a view by braving to disarm suspicion, did the wretched lady compel herself, or was compelled, perhaps, by her noble family, to face the world; but the colour had fled her cheek; her dark eye grew hollow, and at last she veiled them from public notice in a convent of Benedictine Nuns.

There, none were more exemplary in their vigils, their penances, their prayers, than sister Agatha, the name by which the once proud Beatrice Doria was known amongst the nuns. Never to one of them (whatever she might have done in the confessional) did she open the dark secret of her soul; but those of the sisterhood, who occupied adjoining dormitories, told fearful tales of the sounds of agony—groans from the depths of overwhelming dread, which, at times, were heard to issue from her cell. Other of her habits caused remark. Seldom in broad day-light, but never of an evening when the nuns were assembled in the convent garden, was she of their number; and always after sunset did she keep the window of her cell close shut, however sultry might be the weather. Could Beatrice have feared the gentle breezes of a summer's

eve? Them she loved not; but far more had she learned to hold in terror and aversion the fire-flies, the *Lucciole* which came forth when they arose.

Once would she have laughed in derision at the simple superstition of poor Bianca; but upon her it had descended, and in an aggravated form it clung to her guilty spirit. From that Midsummer Eve, when the fire-flies had lighted her in doing her deed of death, they never flitted across her path without recalling its fearful memory. And if the spirit of the murdered maiden had been permitted to revisit earth, and stand before the eye of her destroyer, not more awful to Beatrice would have been the apparition, than the intrusion, into her lonely cell, of a simple harmless *Lucciola*.



Thou shalt not wait for diamonds.



LEASES OF LIFE.

“He’s his own landlord,—his own tenant :—stay
Long as he will, he dreads no quarter-day.”

THE Demon of Frost set out, one dark November morning, to do the bidding of the grim monarch Death. He passed over a forest, and the last leaves of autumn fell in countless thousands at his touch. He passed over a desolate moor, and meeting a benighted traveller, he heaped his snow bed, piped his shrill lullaby, and whistled at knowing it was the wanderer’s last. He entered a garden, and the surviving dahlias shrank in their velvet mantles, and died at the bidding of his icy breath. Then he laid one of his freezing fingers on a little caterpillar, and the

ramping worm grew stiff as iron, and chinked like a stone, as it fell upon the ice-bound earth.

The Demon of Frost went home, well pleased with his work, and after many another walk, upon the like death-doing errands, traversed once more, towards the end of February, the very path he had followed in dark November. Then he saw in the forest but a few remains, half rotted, of his victim leaves. On the desolate moor he passed over the whitening bones of his victim man. In the flower garden not a vestige was visible of his victim dahlias. But where was his supposed victim caterpillar? Amidst the crystal gems of his own scattering, as they melted in the smiles of his arch enemy the sun, sat a saucy butterfly, and the Demon of Frost shook his hoary locks, and gnashed his icy teeth; for he knew that the tiny spark of life which animated that winged creature was the very same which must have laughed at his power in the frost-stiffened caterpillar.

But what has the Demon of Frost, or frozen caterpillars, to do with this melting season? We will endeavour to explain their unapparent relationship, or tell at least how they have been brought to our own minds, as connected with the present time of year.

Every particular season tells a particular tale or tales of some prevailing and appropriate burthen. This, the season of Midsummer, tells especially of *life*,—life in its maximum, like

the sun at its highest,—life on the earth,—life in the waters,—life in the air, busy and joyous; and for every single tale of life told by other things, a million are being repeated in the world of insects.

This is also a season of *leases*, just expired or just renewed. Some, a week ago, were leaving willingly, some reluctantly, their old abodes, while others (contumacious tenants) are still holding fast upon their roof-trees, laughing at notice, landlord, writ, and bailiff. Now of insects in general, save the bee and the silk-worm, it may certainly be said, according to our motto, that

“He’s his own landlord,—his own tenant:—stay
Long as he will he dreads no quarter day.”

This, as respects his local habitation; but if we consider the principle of *life* as the *tenant*—the outward form the *residence*, held at will of the indulgent landlord—the Great Creator of us all,—then the tiniest of midges holds, as the greatest of men, a given lease. Regarded thus, the vital spark, or tenant, whose assigned abode is an insect tabernacle, is oftentimes a most difficult spark to *put out*,—a lease-holder as troublesome to eject (we mean, of course, at the bidding of *subordinate* agents) as the most determined house-clinger that ever baffled bailiff ingenuity.

It is a fact, proved by observation and experiment, that caterpillars will retain their vitality, and pass through their usual changes, after the congealment of their juices by intense

cold. Those of the mag-pie moth, exposed all through the winter on a leafless currant bush, will sometimes become stiff as the twigs they occupy, and those of the cabbage butterfly subjected to a frost which turned them into lumps of ice,* arrived, nevertheless, at their perfect state.

Other insects would seem to be endowed with the same power of resisting cold. Amongst these, are gnats and mosquitos, which, as attested by recent travellers, have risen, an active swarm, from dissolved masses of ice, wherein they have lain imbedded thick as plums in a Christmas pudding.

Nor is it only against the "Demon Frost" that these determined insect occupiers are accustomed to bar the doors of their Lilliputian tenements, a variety of them having been found to shew equal contempt of flood, fire, famine, and steel, those other bailiffs employed as often, in executions, by the universal tyrant.

To exemplify, next, the resistance of insect vitality against the power of *water*. There is a certain beetle called the *Printer*,† because while feeding as a grub upon the under bark of trees, it cuts out therein a variety of tracks resembling letters; and to such an extent was this species of type engraving once carried on, that a million and a half of pines are said to have been sacrificed in the Hartz Forest‡ to supply material for the work. It became, of course, desirable to

* By Reaumur.

† *Bostrichus typographicus*.

‡ In 1783, Kirby and Spence.

knock up a business carried on at such serious public cost; but though these devils of printers were battered, together with their type, within their books of bark—though the trees of their habitation were laid upon ice, and finally plunged in water, they remained alive and unhurt.

A somewhat similar, but yet more wonderful instance of obstinate vitality has worthily obtained a place amongst the “*Miracula Insectorum*” of Linnæus. This is afforded by certain tough-coated grubs,* with rat-like tails, which are common inhabitants of drains and stagnant waters. These, often becoming part and parcel of the turbid pulp used in paper making, exposed afterwards to the action of wooden mallets, and finally squeezed in strongest presses, are declared frequently to have survived uninjured these annihilating operations.

In July or August these miraculous little animals assume the chrysalis or pupa, still retaining their rattish tails, and, early in September, cleave the air as black and yellow flies, bearing some resemblance to drone bees.† We found last summer, laid up in the decayed wood of an old willow, a large assemblage of these rat-tailed pupæ, which had probably, while yet grubs, deserted, for the hollow of the tree, some stagnant and very uninviting pools adjacent.

But what is the tinge of the marvellous, investing the above relations, compared with the red-hot hue of wonder which colours the following almost incredible, yet (as it would seem)

* Rat-tailed larvæ (*Eristalis tenax*) Sewer Fly.

† Vignette.

not ill attested anecdote? The summoners here were the united powers of fire and water—the sturdy spirits of bees the little contumacious tenants which refused to dislodge for all their combined authority.

Mr. Beddome, a respectable chemist of Tooley Street, London, in a letter to the editor of the *Times*, which was copied in the *Times Telescope* for 1822, thus writes:—"I bought twenty large hives, and a hogshead of Dutch honey in the native state, not separated from the wax, which had been in the warehouse above a year; and, after emptying the hives as well as I could, I boiled them for a considerable time in water, to obtain the honey from between the interstices. A considerable number of bees, mixed with honey, floated on the surface of the water. These I skimmed off, and placed on flag-stones outside my laboratory, which was at the top of the house, exposed to a July meridian sun. You may imagine my astonishment, when in half an hour I saw scores of these bees, that had been for months in a state of suffocation, and then well boiled, gradually come to life and fly away. There were so many of them that I closed the door, fearing that they might be disposed to return, and punish me for the barbarous usage they had received at my hands."

The above we must confess to be a marvel of marvels; but there is something scarcely less wonderful in the stubbornness with which the vital sparks of many insects have been known to hold out within the tiny citadels of their bodies

when called on to surrender, not by flood or fire, but by famine. We read of a chameleon fly subsisting nine months upon air,—of a church-yard beetle living without food for three years,—of sheep-lice existing twelve months in a shorn fleece ; while the grub of an aphid-eating fly,* left under a glass, was found alive three months afterwards, the thread of its existence having been actually eight times doubled by the very circumstance seeming most adapted to cut it short.

There is yet another agent of destruction, more piercing than Frost, more overwhelming than Water, more consuming than Fire, more wasting than Famine—a destroyer, not of matter only, but of mind, which has, nevertheless, been set at defiance by the principle of insect life.

This destroyer is a spirit—that deadly spirit drawn from “the vasty deeps” of the distiller’s infernal shades, which, in the shape of Geneva, was once tried by Kirby, without effect, upon a lady-bird. But let us give the experiment in the words of the relator, whose delightful work on insects might never have been written, but for the interest and wonder it excited : “One morning,” he says, “I observed on my study window a little yellow lady-bird with black dots. ‘You are very pretty,’ said I to myself, ‘and I should like to have a collection of such creatures.’” Immediately, I seized my prey, and not knowing how to destroy plunged it in Geneva. After leaving it in this situation a day and a night, and seeing it without

* By Kirby.

motion, I concluded it was dead, and laid it in the sun to dry. It no sooner, however, felt the warmth than it began to move, and afterwards flew away. *From this time I began to attend to insects."*

Lastly, it is not always that cutting steel, or festering brass, are effectual in the severing of that slender thread on which, nevertheless, the life of an insect hangs so strongly suspended.

We are told of beetles found living weeks after impalement on a transfixing pin. We daily see crane-flies (more commonly known as father-longlegs) footing it featly over the grass, or "upstairs and downstairs," with one or more of its half-dozen shanks deficient, and flying merrily, with scarce even a leg left to walk on.

Indeed the famous fable of Agrippa would by no means apply to many of the insect race; for with them, certainly, there does not seem to exist the same degree of mutual dependency observable in other animals between the body and the members. The severed head of a wasp will bite, while its severed leg clutches a morsel of sugar, as if they were saying to the detached stomach, "We have no need of a digester;" and the dismembered body, in return, will sting furiously, as if to reply, "And I have no need of a directing head or assisting limbs."

The same is exemplified in the instance of a dragon-fly, which deprived of its long abdomen, was seen* to devour two

* By Mr. Haworth.

small flies. Connected with this obstinate vitality of insects, comes naturally the question of their sensitivity, which from this very vitality we may certainly infer to be less acute than with other animals. Happily for them, and certainly much to our own comfort, when we think upon the subject, we have far more reason to doubt than to believe the oft-repeated dictum, that

“ The poor beetle, which we tread upon,
In corporal sufferance feels as great a pang
As when a giant dies.”

The above facts alone are nearly enough to prove the contrary ; for did a poor beetle trod upon, or impaled, endure, in proportion to its size, the same amount of suffering as a giant, it is more than likely that life would be driven from its seat long before the expiration of weeks of torture.

So with our other instances : a giant from whom one leg or one arm, or both together, had just been forcibly subtracted, would certainly feel no inclination, even if he had the power, to perform steeple-chases over walls and hedges (not in a moment's agony, but for successive days of apparent enjoyment), as the father-longlegs is accustomed to go vaulting over great stones and high grass, under similar circumstances of deprivation. Neither, we presume, would a giant's decapitated head, though furnished with the palate of a gourmand, feel much in a humour, if it felt at all, to indulge in the pleasures of a venison-pasty, as does, seemingly, the detached cranium

of a wasp in the pleasures of a peach, or that of a dragon-fly in the discussion of its butterfly game.

But there are other reasons more scientific, if not more conclusive, for supposing that the sensitivity of insects is inferior to our own and that of other vertebrate and warm-blooded animals, whose nervous system is altogether different. In the latter, the nerves and spinal marrow are the roads by which sensations travel to the brain (the common sensorium), the detachment of which from the body deprives it of motion and feeling; whereas the nervous system of insects consists of a double nervous chord, formed at intervals into knots or ganglions, from whence proceed, in pairs, principal nerves, with branches distributed to every part of the frame.*

The existence of any insect brain has been denied by Linnæus and subsequent naturalists; but Cuvier and Lamarck so denominate the upper knot of the nervous chord, because distinguished by the sending forth of nerves to the principal organs of the senses. The multiplied and detached centres of sensation, thus furnished by the knots or ganglions, sufficiently account for life and motion in the divided portions of insect frames; also for their seeming to feel comparatively little general pain from the loss of limbs, or even head.

Last, not least, there is another reason, built on the moral attributes of the Great Creator, for believing that the insect frame is one of extreme sensibility to outward injury. Can

* See Kirby's and Spence's *Introduction to Entomology*, p. 278.

we imagine that He whose "mercy is over all his works," would do other than protect by a shield of comparative obtuseness that innumerable multitude of living things, which, from their numbers and minuteness, often also in the seeming end of their creation (that of affording food for others), are exposed to continual mutilation, as well as violent destruction. Were it otherwise, independently of what they would endure from other agencies, of what an infinity of insect suffering should *we* daily, hourly, minutely, be the involuntary cause! Not a summer ramble could we take—not a flower could we pluck—not a fruit or vegetable eat—without exacting from agonised multitudes a penalty for each enjoyment. Thought too horrible to be a just one!

Conclude, however, what we may, it must still be admitted, that unless we could for a season be conscious tenants of an insect tabernacle, it is impossible to say exactly how, or how much an insect tenant feels on being summoned, vainly or otherwise, to give up its habitation; and since on this point a shade of uncertainty must ever rest, we are bound to give our little fellow-beings all the benefit of the doubt, and extend even to them, as much as in us lies, the protection of our golden rule.

Children are almost always disposed to the commission of acts of cruelty; but only in most cases from ignorance or want of thought; for there is, we believe, in every unperverted mind a natural repugnance to the taking of the life we cannot

give. Long ago we attempted to make something of an entomologic collection—were eager enough in pursuit—too rude, doubtless, in triumphant capture; but when it came to the cold-blooded business of impalement, the pin fell from our grasp, and the prisoners regained their liberty. We were then too happy in the bright buoyancy of our own spring-time to bear to deprive one of them of an existence so much like our own. Having grown, what some would call more callous, others, less squeamish, we have, since, been the voluntary agents of insect extinction, though only when absolutely essential to the purposes of our pursuit. We have elsewhere offered, as we hope, an ample defence for “our hobby” on this, its seemingly objectionable side; but that defence was addressed to the reason rather than the feelings, consequently not to the *very young*. We would not even *desire* that the *very young* should be permitted to begin the study of insects by their collection, because the habit of destroying them might assuredly tend to blunt the feelings *before* the acquirement of sufficient knowledge and reflection to counteract its influence. But it is different as life advances: for ourselves, at least, we can affirm safely that, though we do occasionally add a beetle or a butterfly to our collection, the acquisition is always made at the cost of a degree of not diminished pain, and we were never so careful, as now, to avoid aught that may uselessly injure or torment one of the insect crew. With a mere collector for sale or exhibition the reverse of this may happen;

but none can bestow meet observance on their exquisite beauty, or due thought on their surpassing endowments of instinct and adapted organs, without ranking them higher than they were wont in the scale of being, and feeling of course a proportionate reluctance to dislodge one from its assigned place.

Now this act of dislodgment would seem, from the instances of insect vitality above recorded, to be a matter of no easy accomplishment; but it is not always, or even usually, that these little spirits cling so firmly to their tiny tenements. Notwithstanding the marvellous resuscitation of our "boiled bees," heat is an agent whose notice to quit is seldom disregarded by insect tenants.

The life of a moth or butterfly, placed in a cup closely covered, then set in boiling water, is usually extinct in two or three minutes; and moths that are small, flies, and other lesser insects, put under a glass with a few fresh laurel leaves, well bruised or cut, are soon, to all appearance, and often in reality, killed by the emission of prussic acid. It is requisite, however, to make the dose powerful, or repeat it,—the seemingly extinguished spark of life being otherwise apt to rekindle. Before stiffness follows death, subjects for the cabinet are transfixed with slender pins, and set up on cork; small angular slips of card being employed with other pins to keep the wings and other parts in a natural position.

Lastly, though as matter of reasonable inference we feel almost certain, that the sensitivity of insects to corporeal pain

is, if not below, at least proportioned to their size, we equally believe that the benevolent Creator has endowed them with capabilities of enjoyment far exceeding the measure of their bulk.

With however little pain the insect may die, it is certain that it lives with pleasure; and we are not therefore justified, through wantonness, or for any insufficient object, in shortening even for a moment (perhaps to *it* a year) its term of enjoyment—its inherited “Lease of Life.”



“They set me at defiance!”



A SYLVAN MORALITY ; OR, A WORD TO WIVES.

“ These summer wings
Have borne me in my days of idle pleasure ;
I do discard them.”

“ And, Benedict, love on ; I will requite thee,
Taming my wild heart to thy loving hand.”

WE have a young relative, about whom we are going to relate a little anecdote connected with insect history, which requires, however, a few prefatory words.

At the age of 17, Emily S— “ came out,” gilt and lettered, from the Minerva Press of a fashionable boarding-school, and was, two years afterwards bound (in white satin) as a bride. In

the short period intervening between these two important epochs, she had had a prodigious run of admiration. Sonnets had been penned on her pencilled brow, and the brows of rival beauties had contracted at the homage paid to hers. All this Emily had liked well enough—perhaps a little better than she ought; but where was the wonder? for besides excuses general (such as early youth and early training) for loving the world and the world's vanities, she had an excuse of her own, in the fact that she had nothing else to love—no mother, no sister, no home,—no home at least in its largest and loving sense. She was the orphan but not wealthy ward of a fashionable aunt, in whom the selfish regrets of age had entirely frozen the few sympathies left open by the selfish enjoyments of youth.

When Emily married, and for a few months previous, it was of course to be presumed that she *had* found something better than the world whereon to fix the affection of her warm young heart. At all events, she had found a somebody to love *her*, and one who was worthy to be loved in return. Indeed a better fellow than our friend F— does not live; but though fairly good-looking, and the perfect gentleman, he was not perhaps exactly the *description* of gentleman to excite any rapid growth of romantic attachment in the bosom of an admired girl of nineteen.

Why did she marry him! Simply because amongst her admirers she liked nobody better, and because her aunt, who

was anxious to be relieved of her charge, liked nobody so well;—not because he had much to offer, but because it was little he required.

Soon after their marriage the happy pair set out for Paris. F—, though his means were slender and tastes retired, made every effort (as far as bridegroom could so feel it) to gratify his lively young wife by a stay at the capital of pleasure. After a subsequent excursion, they returned within a year to England, and settled at a pretty cottage in Berkshire, to which we speedily received a cordial invitation. It was no less readily accepted; for we were anxious to behold the “rural felicity,” of which we little doubted that our friends were in full possession.

The result, however, of a week’s sojourn at their quiet abode, was the reluctant opinion that, somehow or another, the marriage garments of the young couple did not sit quite easy; though to point out the defect in their make, or to discover where they girted, were matters on which it required more time to form a decided judgment. One thing, however, was pretty obvious. With her matronly title, Emily had not assumed an atom of that seriousness—not sad, but sober—which became her new estate; nor did she, as we shrewdly suspected, pay quite as much attention to the cares of her little *ménage* as was rendered incumbent by the limited amount of her husband’s income. She seemed, in short, the same thoughtless pleasure-loving, pleasure-seeking girl as ever;

now that she was captured, the same volatile butterfly as when surrounded and chased by butterflies like herself. But her captor? asks some modern Petruchio—had he not, or could he not contrive to clip her pinions? Poor F—! not he! he would have feared to “brush the dust” from off them; and, from something of this over-tenderness, had been feeding, with the honeyed pleasures of the French capital, those tastes which (without them) might have been reconciled already to the more spare and simple sociabilities of a retired English neighbourhood. He was only now trying the experiment which should have been made a year ago, and that with a reluctant and undecided hand.

Poor Emily! her love of gaiety had now, it is true, but little scope for its display; but it was still strongly apparent, in the rapturous regret with which she referred to pleasures past, and the rapturous delight with which she greeted certain occasional breaks in the monotony of a country life. An approaching dinner-party would raise her tide of spirits, and a distant ball or bow-meeting make them swell into a flood. On one or two of such occasions, we fancied that F—, though never stern, looked grave—grave enough to have been set down as an unreasonable fellow; if not by every one, at least by that complex “every body,” who declared that his wife was “one of the prettiest and sweetest little women in the world,” and, as every body must be right, so of course it was.

Rarely, indeed, had our gentle Benedict beheld the face of

his "Young May Moon" absolutely obscured; but then it had always been his care to chase away from it every passing, or even approaching, cloud; and he would certainly have liked, in return, that its very brightest rays should have shone on him direct, instead of reaching him only, as it were, reflected from what in his eyes, certainly, were very inferior objects.

We had passed some weeks at our entertainer's cottage, when rumours got afloat, such as had not disturbed, for many a year, the standing, and sometimes stagnant, pool of Goslington society. The son of Lord W— was about to come of age, and the event was to be celebrated by grand doings; a varied string of entertainments, to be wound up, so it was whispered, by a great parti-coloured or fancy ball. Rumours were soon silenced by certainty, and our friends were amongst those who received an invitation to meet all the world of Goslington and a fragment of the world of London, about to be brought into strange conjunction at W— castle. What shapes! grotesque, and gay, and gorgeous—ghosts of things departed—started up before the sparkling eyes of Emily, as she put the reviving talisman into F—'s hand. No wonder that her charmed sight failed to discover what was, however, sufficiently apparent, that her husband's delight at the honour done them by no means equalled her's. Indeed we were pretty certain that not merely dissatisfaction, but even dissent, was to be read in his compressed lip, and, for once, forbidding eye.

Nothing was said then upon the subject; but we saw the

next morning something very like coolness on the part of F— towards his wife, which was returned on hers by something very like petulance. Ah! thought we, it all comes of this unlucky fancy ball! We had often heard it declared by our friend, that he hated every species of masquerade, and would never allow (though this was certainly before his marriage) either sister, wife, or daughter of his to attend one. But, besides this aversion for such entertainments in general, he had reasons, as we afterwards gathered, for disliking, in particular, this fancy ball of Lord W—'s. Amongst the "London World," Emily would be sure to meet several of her quondam acquaintances, perhaps admirers; and though he was no jealous husband, he preferred, on many accounts, that such meetings should be avoided.

The slight estrangement spoken of did not wholly pass away, though so trifling were its tokens, that no eye less interested than our own might have noticed their existence. Indeed neither of the parties seemed really angry with the other, appearing rather to think it incumbent on them to keep up a certain show of coolness; but whenever the sunny smile of Emily broke even partially through the half transparent cloud, it dissolved in an instant the half-formed ice of her husband's manner. By mutual consent the subject of the fancy ball seemed left in abeyance, and while in every circle, for miles round, it formed the central topic, in ours it was the theme forbid. Thence we tried to infer that it was a

matter abandoned, and that Emily's better judgment, if not her good feeling, had determined her to give up her own liking, on this the very first occasion on which, we believe, her husband had ever thwarted it.

Well—whether, as with us, awaited in silence, or, as with the many, harbingered by the music of many voices—the grand event marched on ; and a day was only wanted of its expected arrival, when business called F— to London, from whence he was not to return till late at night. Soon after his departure, which followed an early breakfast, we left Emily, as we supposed, to the business of her little household, and repaired, as was our wont, to the library,—a small apartment which our friend F— had made the very bijou of his pretty cottage. It was tastefully fitted up in the gothic style, with a window of painted glass,—a window, by the way, especially suited to a book-room, not merely as pleasing to the eye but for a correspondence which has often struck us. The many-coloured panes, through which the light of day finds entrance, form no unfitting symbol of a library's contents, whereby the light of intelligence is poured upon the mind through as many varied mediums, from the deep, cold, black and blue of learned and scientific lore, to the glowing flame colour and crimson of poetry and romance. Having taken down a choice copy of the *Faery Queen*, we committed our person to an ebony arm-chair, and our spirit to the magic guidance of our author's fancy. Obedient to its leading, we were careering somewhere

betwixt earth and heaven, when a slight noise brought us down for a moment to our proper sphere ; yet hardly,—for on looking up we beheld, standing in the wake of a coloured sun-beam, from which, on wings of gossamer, she seemed to have just descended, an unexpected apparition of surpassing grace and beauty. Titania's self, just stepped upon the moonlit earth, could scarcely have stood poised on an unbroken flower-stalk, in form more airy, in attitude more graceful, with countenance more radiant than those of Emily F—, as, arrayed in likeness of the Faery Queen, she thus burst upon our view, and with an air half archly playful, half proudly triumphant, enjoyed our bewildered surprise, and received the involuntary homage of our admiration.

We saw in a moment how the matter stood ; Emily was really going to the fancy ball ; and this, of the Queen of Fays, was the fantastic and too bewitching costume she had chosen to assume. Knowing her kind heart, and having believed that its best affections had been gained by her estimable husband, if not bestowed on him at first, we were vexed and disappointed in our young relation, and felt it only right to give, if we could, a check to her buoyant vanity, by letting her feel the weight of our disapproval,—shown, if not expressed. “So I see, Emily,” said I, in the coldest tone ; “I see, after all, that you are going to this foolish ball.”

The beaming countenance of the beautiful sylph darkened in a moment, like a cosmoramic landscape. “And why

not?" returned she pettishly;" "I suppose then you don't approve."

"*My* approbation can be of very little import, if you possess that of your own heart, and that of your husband. Under what character, pray, does he attend you? I suppose he plays Oberon to your Titania?"

Emily's face reddened. Some strong emotion heaved her bosom, and I saw that pride alone kept the starting tears from overflowing. "Charles," said she, with an attempt at assumed indifference, "will not be there at all; I am to go with Lady Forrester."

We felt more vexed than ever, and wished to say something which might yet hinder the young wife's intention; but while considering what that something should be, or whether, indeed, our age and slight relationship gave a sufficient right to say anything, we looked down for a moment on our still open book. Of that moment Emily availed herself to effect an escape, and on raising our eyes we only caught a glimpse of her glittering wings as she glided through the doorway. Our first impulse was to recall her; our next thought, to leave her to herself. If her better nature still struggled, remonstrance of ours, we considered, might only serve to set wounded pride against it; and wounded passions, like wounded bravoes, fight most desperately. We saw no more of our young hostess till the hour of dinner, to which we sat down *tête-à-tête*. Emily's sweet face had regained all its usual expression of good

humour, and by almost an excess of attention, and an effort at more than ordinary liveliness, she strove to make amends for the slight ebullition of temper stirred up by the morning's incident; but her sociability seemed forced, and we felt that our own was much of the same description.

Our after dinner sitting was soon ended for an evening stroll. It had been a sultry day towards the end of August; the lazy zephyrs had been all asleep since noontide; so, with a view to meet the first of them which should happen to be stirring, we directed our steps towards a high open heath or common. Its summit was crowned by a magnificent beach, towards which we slowly ascended, under a shower of darts levelled by the declining sun; and, on arriving at the tree, were right glad to seat ourselves on the circular bench which surrounded its smooth and bulky bole.

Here, in addition to the welcome boons of rest and shade, we were presented gratis with the exhibition of a finer panorama than the Messrs. Barker ever yet produced.

What a scene of tranquil splendour lay before us; one of those glowing pictures of the declining day and declining year, whereon, like a pair of dying painters, they seem to have combined their utmost skill and richest colours in order to exceed, in a last effort, all the productions of their meridian prime.

After a few moments of silent admiration, we were on the point of exclaiming to our young companion, "Oh! who could prefer the most brilliant ball-room to a scene like this?"

but we checked the impulse; for perhaps, thought we, the “still small voice,” which speaks from all around us, is even now whispering to her heart. But never, we believe, was adder more deaf to the accents of the “charmer,” than was Emily at that moment to those of nature. Her mind, we are pretty sure, was still running, and all the faster as she approached it, on that fancy ball. Perhaps she suspected that ours was following the same turn, and knowing of old our habit of making observations upon insects, she, by a little womanly artifice, availed herself of it to divert their course. Pointing with her parasol to a long procession of brown ants, which were crossing the foot-worn area beneath the tree,—“look,” said she, “I suppose they are going home to bed.”

“Or perhaps to a ball,” rejoined we, quite unable to resist the pleasure of taking our fair cousin in her own *ruse*; “but let us follow them, and see.”

Emily was delighted at having, as she thought, so ingeniously set us on our hobby, and attended us to the spot whither we had traced the little labourers. Their populous settlement bore no appearance of evening repose. Other trains were approaching in various directions, to meet that which we had followed, and a multitude was covering the conical surface of the ant-hill, as if taking a farewell bask in the glowing sunset. Amidst the congregated many, and distinguished from the common herd by very superior bulk and four resplendent wings, were several individual ants, which Emily (as well she might)

mistook for flies, and inquired accordingly what could be their business in such incongruous society. "They are no flies," said we, "but ants themselves—female ants,—though with somewhat of the air, certainly, of being in *masquerade* or *fancy costume*. But say what we will of their attire, we must needs confess that they are in their proper places; for they are the *matrons* of the community, and, as we see, they are *at home*."

Our young companion made no reply; but stooping down, seemed wholly engrossed by examination of the ant-hill. "Look," exclaimed she, presently; "there is one of these portly dames without any wings at all. I suppose some of her neighbours have taken up a spite against her, and combined to strip her of her glittering appendages."

"By no means," we answered, "*she has laid them aside by her own voluntary act*. Only see, my dear Emily, here is one of her sisters even now employed in the business of disrobing."

We both stooped, and watched narrowly the curious operation to which we had directed our young friend's attention. One of the larger insects in question was actively employed in agitating her wings, bringing them before her head, crossing them in every direction, throwing them from side to side, and producing so many singular contortions as to cause them all four to fall off at the same moment, leaving her reduced to the same condition as her wingless sister. Fatigued, apparently, by her

VOL. II.—12.

late efforts, she reposed awhile, after the accomplishment of her purpose, brushed her denuded corselet with her feet, and then proceeding to burrow in the soft earth of the hillock, was speedily lost to our observation. "How very odd!" said Emily; "what can possibly be the meaning of such a strange, unnatural proceeding?"

"I will tell you," replied we, "that which has been thought fully to explain its intention. This insect female, in common with her sisters, has hitherto been privileged to lead a life of entire indolence and pleasure. A few days since, having risen from her lowly birth-place on those discarded pinions, we might have seen her disporting in the air with some gay and gallant companions, of inferior size, but winged like herself. But now her career of pleasure, though not of happiness, being at an end, her life of usefulness is about to begin, and, in character of a matron, she is called to the performance of such domestic duties as will henceforth confine her to the precincts of her home.

"Of what use now, therefore, are the glittering wings which adorned and became her in her earlier youth? Their possession might only, perchance, have tempted her to desert the post which Nature, under Divine guidance, has instructed her to fill. Obedient to its teaching, she has thus despoiled herself of the showy pinions which (essential to her enjoyment in the fields of air) would only have encumbered her in the narrower but more important sphere of home."

Emily listened in silence to our lecture on Entomology, which must have been delivered, we suppose, with peculiar clearness, as she did not, according to her usual custom, follow it up by any further inquiry or comment. We soon afterwards bid adieu to the insect community, and wended our way homewards.

F— returned from London the same evening; but availing ourselves of an old friend's freedom, we had retired to bed before his arrival.

Next morning ushered in the day, "the great, the important day," of the fancy-ball—neither "heavily" nor "in clouds;" yet greatly did we fear that the pleasant sunshine which greeted our opening eyes would be met with no answering beams at the breakfast-table of our friends.

How agreeably, therefore, were we surprised, when, on entering the parlour, we at once perceived an expression of more perfect serenity, on the countenances both of F— and his pretty wife, than had been worn by either since the day of that confounded invitation.

"Ah!" thought we, "it's pretty plain how the matter is ended; that wicked little fairy has wrought her charms for something—has carried her point—and will carry HIM, her willing captive, to the ball. What poor weak fools fond husbands are! Thank heaven that—— Well! perhaps better so than worse."

Breakfast proceeded; chat in plenty; but not a syllable

about the fancy ball ; till bursting to know how the case, so long pending, had really ended, we ventured on a pumping query—"At what hour, Emily," said we, "does Lady Forrester come to take you to the ball?"

"I have written to prevent her calling."

"Oh, then, you are going under other escort?" and we looked slyly at F—.

"I am not going at all," said Emily.

Here she put in our's her little white hand, and looked up archly in our face,—"*I am not going, for I have laid aside my wings!*"

"My good fellow!" said F—, as he took our other hand ; "you deserve to be made President of the Entomological Society."

NOTE.

That remarkable procedure of the matron ant, whereon the preceding narrative is founded, is a well authenticated fact. The circumstances attending it were partially noticed by Gould, the historian of English ants, Linnæus, and De Geer; and observed and related with greater accuracy by Huber, part of whose interesting account we shall combine with a few introductory remarks by a living naturalist,* whose own testimony is given to its veracity.

“It was supposed by the ancients that all ants, at a certain age, acquired wings; but it was reserved for recent naturalists to ascertain that it is only the males and females that are ever winged, and that the latter lose them after pairing in the air, as they have no longer any use for them.”

The younger Huber, by means of his artificial formicaries, traced the development of the wings in the female from their first commencement till he saw them stripped off by themselves, and laid aside like cast-off clothes. * * *

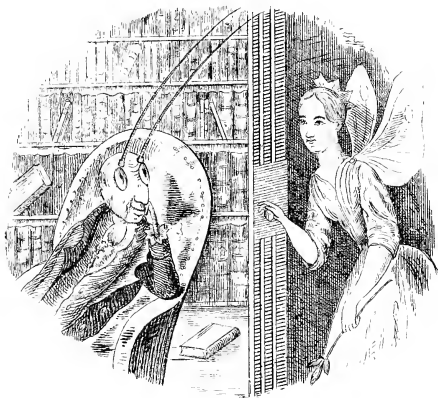
He one day visited some ant-hills which he knew to be filled with winged inhabitants, whose departure could not be far distant. “Hardly,” says he, “had I reached the spot, when I saw several, both males and females, pass over my head, while at the ant-hill I observed others take flight, the males always preceding. Of these I took eight pairs, and placed

* Rennie, in *Insect Miscellanies*.

them in a box to observe them on my return home ; but a violent shower, which came on at this moment, offered me a sight as singular as unexpected. As soon as the rain was over, I saw the earth strewed with females without wings. They were most likely the very ones that I had seen in the air. * * On my return home, I placed my eight prisoners with some moist earth in a garden pot covered with a glass. It was nine o'clock in the evening : at ten the females had lost their wings, which I observed scattered here and there, and were hiding themselves under the earth." Three of the insects placed in a box, without earth at the bottom, did not, on this account, divest themselves of their wings ; but another, furnished with a light earthen bed, no sooner perceived it, than "*she extended her wings with some effort, brought them before her head, crossed them in all directions, threw them from side to side, and produced so many singular contortions, that all four wings fell off at the same moment. After this change she reposed, brushed her corselet with her feet, then traversed the ground, appearing to seek a place of shelter ; she partook of the honey I gave her, and at last found a hiding place under some loose earth that formed a little natural grotto.*" Huber repeated, and describes minutely, the like experiments on several females of different species, and always with the same results.

Gould (writing about 1747, and calling the winged females "*large ant-flies,*" the males *small* ones,) says—"If you place a number (of the former) in a box, the wings of many of them

will, after some time, gradually fall off like autumnal leaves." He also observes, that "a large ant-fly (contrary to other insects) gains by the loss of her wings, is afterwards promoted to a throne, and drops these external ornaments as emblems of too much levity for a sovereign." But as female ants hold little of the state and none of the authority of queens, he would have spoken of their wings more properly as incumbrances to their new matronly duties, one of which is the construction of chambers in the earth. July and August is their usual season for disrobing.



"Arrayed in likenels of the Fairy Queen"



BUSINESS AND PLEASURE.

“If all the year were playing holidays,
To sport would be as tedious as to work.”

ALL the worlds within our world of earth are now supereminently busy. The fashionable world is making a weary business of Pleasure—the trading world a weary pleasure of Business. For the luxury of the one, and the profit of the other, the working world (as always) is busy enough too; though as to pleasure, it is, alas! seldom enough that we behold her jocund ladyship tripping hand-in-hand with toil in the barren land of labour as laid down in their chart politic. But

of all the worlds now busy, the insect world (as busy as any) combines, perhaps, with its labour the most equal amount of pleasure. Here at least we may joy our eyes with the sight of work and play as frequent companions, and when not exactly seen together, they are here found almost always to follow each other in close and orderly succession.

Some insects indeed there now are, neither merry at their work nor merry at their play, yet are they, nevertheless, in passive enjoyment of a summer holiday. These consist, for the most part, of certain "Spinners and Knitters in the sun," whose chief work as caterpillars having been finished in spring or early summer, are now, as aurelias, slumbering in golden rest; while others, occupied in their last laborious effort, are bursting from their self-wrought trammels, whether of silk or fabric more substantial, to employ themselves henceforth, with other busy idlers, solely in pursuit of pleasure.

Distinguished from these active idlers, as most active of workers, are the busy Bees; and in these especially, as we watch them half-labouring, half-revelling in the midst of sunny odours, we seem to see business and pleasure mingled in their very essences, and enclosed—a drop to each—within those tiny vases "*aux milles fleurs*"—the bodies of our insect gatherers.

Of the business seemingly so pleasant which makes up the life of a Bee Labourer, be it now our business and our pleasure to say a few words, at all events, in season. But how do

justice to the honeyed theme? How discourse sweetly and wisely, yet withal briefly—above all, with aught of novelty—of those favoured labours sung by a Virgil, chronicled by a Varro, hymned by a Watts, dramatised in the “good old times” of our Virgin Queen—royally patronised in the better new times of our wedded monarch?

A bee-hive, however, is no easily exhausted store, containing, as an object of thought, an infinite number of things besides bees, or wax, or honey. It is a perfect emblematic treasury, filled with analogies, precepts, patterns, poetry, morality, divinity.

In our sketch of bees as “a body politic,” we have seen indeed how ill befitting is their waxen imagery to serve as a model for human imitation—how frail to falling dynasties the support of waxen pillars; but there yet remains in the economy of the hive (especially as exhibited in bee labour) enough in plenty for counsel, for reproof, for pattern, for reflection, for admiration—all resolving themselves into adoration of Him to whom adoration alone is due.

But it is time, without further prelude, to open the straw casket wherein so many jewels are contained; though, in truth, it is in their very profusion, full as much as in their previous appropriation, that a difficulty lies. How from the flowers of bee economy, in themselves so numerous, and numerously culled, shall we select a small and simple posy, fit on this summer day to refresh without overpowering? How, in

short, *tie up* without spoiling the delicate sweets of bee labour?

Abridgments of all history make, as we think, and began to *feel* when we were yet too young to think about it, the dull-est of all dull reading. They strain the memory because they do not interest the mind, and are therefore, by the way, the least adapted to young people. To put epitomes into the hands of children is, as an American writer justly observes, as if we were to give them distilled spirits instead of diluted liquids. It is detail and minutiae which make historic relations pleasant to follow; and as with the history of men, so it is tenfold with that of bees; the miniature marvels of whose proceedings require for due appreciation to be followed in the minute records of insect biography.

Well, we are lingering still on the threshold of the hive; and here, just as we have penned the words "insect biography," there meets us a venerable shade who must detain us yet a little longer. How can we enter the bee-hive without a tribute of admiration and respect to him, who for us and for thousands has laid the secrets of the bee-hive open—without a word as well as thought of Francis Huber, the bees' best biographist?—the great, the good, the gifted, yet bereft—the clear-sighted, yet the sightless Huber. At this season, nearly a century ago, did he first open on the summer sunshine those admiring and inquiring eyes, which for only a brief portion of a long life were permitted either to behold the glories

of day, or to look into the minuter wonders of the animate creation. Yet most marvellously and kindly in his case, as in many others of similar privation, was that privation balanced. Through the eyes of others, aided by his own mental vision of surpassing clearness, he was enabled to keep watch on the works and ways of the little people of the hive, to throw a blaze of light on their heretofore obscure history, and to become, for the wise recreation of future generations, as well as for the amusement of his own otherwise dark hours, their most interesting and circumstantial chronicler.

Ocular observation has completely verified the marvellous details of bee economy first related by their blind discoverer, and in all that he describes, nothing, perhaps, is so wonderful, more admirable, or more interesting, than the accuracy of his details,—evidences as they are of the glorious superiority of mind over matter—trophies of persevering victory over a bodily impediment, which, but for the energy of all-subduing will, would have shut him out for ever from that field of research, to whose entrance only his sight had guided him.

But besides being happy in his own energetic mind, Huber was also happy in the providential blessing and possession of friends—friends who, in the grand pursuit of his darkened but not gloomy life, were without a metaphor “eyes to the blind”—the blind object of their affectionate regard and admiration. These were, in the first instance, Francis Burens,

an uneducated peasant, yet his faithful friend and constant and efficient assistant; next his wife; and last, not least, his son, P. Huber, afterwards celebrated for his own researches into the history of ants.

In the circumstances attendant on Huber's marriage we meet with one of those pleasant romances of reality which occasionally vary the monotony of every-day life. At an early age, the sight of our persevering naturalist fell a sacrifice to minute and intense observation exercised in his darling study. As with our prince of poets, "a drop serene"* had "quenched" his "orbs" of vision; nor would he for their recovery undergo the usual operation. Previous to this affliction he had formed an attachment to Mademoiselle Aimée Pullein, daughter of a Swiss magistrate, who opposed the marriage of the lovers on the ground of the young man's blindness. No sooner, however, did the lady arrive at an age which gave her (at least in her own opinion) a right of judging for herself, than (after refusing offers of greater promise) she united her lot with that of the blind yet loving Huber, with whom forty years of subsequent happiness, wherein she was his secretary, his observer, and the sharer, not only of his researches, but of the enthusiasm with which he followed them, gave her no cause to repent her choice. Even when deprived by death of his affectionate helpmate, the blind and then aged Huber was not left destitute of woman's supporting tenderness,

* *Gutta serena.*

which, in the person of a married daughter, Madame Molin, waited on him to the hour of his death, in the year 1831, at the age of eighty-one.*

From the bees' historian come we at last to bees themselves, though not yet exactly to the bee-hive; for if we began with the beginning—the birth—that is, of our busy workers—it would carry us back to winds of March or frosts of February. Let us take them, therefore, even as they are, humming about us on this summer day. As we look around, it may perhaps, however, strike us that our troop of winged labourers is not mustering as strong as might have been expected on such a glorious field-day as the present, when flowering sweets are clustered “thick as autumnal leaves”—“in Vallombrosa,” and when under the mid-day sunshine the flowers are throwing out in abundance their honeyed perfumes, serving as scented messengers betwixt them and their insect adorers. How is it, in short, that, instead of many, the bees on wing are few? Are the bulk of their labourers playing the part of drones?

Suspect it not; but know that working bees, like all the busy who would be “healthy, happy, and wise,” rose this morning with the lark; and, while we were idle in our beds of down, were here active in their beds of flowers. Having filled their bottles with honey and their baskets with pollen, most of them have gone home two hours ago (supposing it now high noon), and are at present under cover of their hive,

* Huber died at Lausanne.

either resting or still busied in domestic occupation. From four to ten in the morning are, in the warmer months, the usual working hours of bees; but in the spring, or when newly entered on the occupation of a hive, they labour abroad incessantly from morn till evening.

A sprinkling of workers have, however, kept on wing; and close at hand, from a border of mignonette, we hear the voice of the "Oriental Deburah," humming cheerfully of pleasure mingled with labour; and who in this busy little creature can doubt their union, as we see her rolling amidst her golden riches, adroitly brushing the precious dust from off her antlers into the curious panniers with which her thighs are furnished to receive it?

Now, her baskets are full laden, heaped with orange pollen high above their brims; but an elastic fringe of hairs by which these are surrounded hinders their contents from being overturned. Our collector's task is completed for the morning, and thus laden without, and doubtless lined within, by a full measure of the nectared juices, "sucked from buds and bells," she takes wing, and makes so light of all her lading, that straight as an arrow from a bow (and eke as swiftly) she cuts the air, even in the wind's eye, in the exact direction of her straw-built home.

How is her unerring flight directed? Kirby thinks it is her senses, aided by memory, which conduct the bee in her returning course. But surely no senses with which we are acquainted,

unless of subtle accuracy infinitely surpassing those boasted by ourselves, could direct either bee or bird through miles of pathless air to one desired point; nor, in some cases, as in a bee's first excursion, can memory be the leading principle. What, then, is the little traveller's guide? Who can exactly say? but we are inclined to look upon it as a faculty by itself—an additional sense, or a peculiar instinct—call it which we will—whereby that Paternal Power, whose care is over all, is pleased to conduct to their haunts of labour and subsistence, and back again to their homes of safety—not alone the bee or bird, but a variety of other creatures, who want a tongue to inquire the way.

Howsoever guided, our bee labourer has arrived at her "waxen city." Its outer rampart of straw conceals her from our view as she disappears within its entrance; but, thanks to the inventor of glass hives,* and to those who have turned them to good account, we shall be able, through the eyes of others, and through the observations of the eyeless Huber, to give a tolerable guess at the home proceedings of our laden forager and her busy sisterhood.

Our bee, as before noticed, was the bearer of a double load—pollen or dust of anthers in her thigh baskets,—nectar in her internal honey-bag; but neither of these floral treasures have been collected for herself. A working bee is no selfish or single individual—she is the devoted subject of an idle mon-

* Maraldi, an Italian mathematician, 1712.

arch ; a member of a well ordered and numerous community ; she knows her duties and performs them. On lately seeing her unfold her tongue, and draw in, with seeming greediness, the nectar of a flower, one might have fancied that she was quaffing her luscious draught in the same luxurious sensual spirit of self-regalement, as a human votary of Bacchus, and with no more creditable end in view ; but if such were our opinion we should soon perceive, on watching her home proceedings, how grievously we wronged her.

Fulfilling, in the first place, her duty of loyalty, she offers, as a tribute to her queen, a portion of her honey, pure as at the moment of swallowing,—an operation merely of transfer from the nectary of the flowers to her own honey-bag, or first stomach.

The remainder, all at least except that trifling portion required for her own support, she then deposits within one of the store-cells of which the contents are appropriated to the supply of the community ; or instead of this, on finding a group of labourers employed in building, to some of them, hungry and thirsty with their toil, she kindly gives of her abundance, or perhaps of her scarcity, a draught of sweet refreshment.

Her honey thus disposed of—what does she do with her pollen, the golden lading of her triangular thigh baskets ? Perhaps she swallows it herself, or perhaps is spared that trouble by some of her companions. But in thus gorging neither she nor they are making it an object of greedy appro-

priation. This pollen or farina of flowers—after undergoing a certain process, of which swallowing forms a part—becomes what is called bee-bread, and constitutes, as such, one of the strongest supports of bee existence, especially before arrived at maturity. After being swallowed, it may perhaps be imparted at once to some of the infant occupants of the nursery cells; or, if more is collected than immediate need requires, this, as well as honey, is laid up in store, being diluted and packed for future use.

We have seen how our busy gatherer has brought home her quota of pollen or bee-bread, and honey or bee-wine; but has she contributed to the general magazine her share of wax,—that material so indispensable to form the “casks,” or caskets wherein both these treasures are preserved? She has done her part (doubt it not!) in augmentation of this useful commodity; but on the present occasion she can furnish no wax, because she has given away all her honey. But what has this to do with it? Might we not say as well, that a man could not furnish wood for a cask because he had given away all his wine!

Why a bee could not contribute wax because possessed of no honey is a question, certainly, which people who know little about bees would naturally ask now; and the same query might have been put less than a hundred years ago even by those best acquainted with their habits. The old naturalists were not aware of the least inaccuracy in the poetic

idea of Shakspeare, when he makes his Titania, commanding her fairies, bid them

“ The honey-bags steal from the humble bees,
And for night tapers crop their waxen thighs.”

That Humble-bees, and *all* bees, were in the habit either of collecting wax ready made from flowers, or of manufacturing it from this flowery pollen (the lading of their thigh baskets) was the generally received opinion; and even those close observers, Reaumur and Bonnet, seem to have thought much the same; whereas it is now well ascertained that honey, not pollen, is the original material of wax, which indeed no Bee can make without it.

That the primary foundation of wax is not pollen was first concluded, by the celebrated John Hunter, on account of its varied colour; whereas that of wax is uniform; and moreover pollen continues to be collected by the workers of those hives wherein the comb is already complete. Huber and others further found, on experiment, that bees fed entirely upon honey and sugar, and deprived, at the same time, of all opportunities of gathering pollen, were able without it to construct combs, though utterly at a loss to feed their brood for lack of the bee-bread derived from farina of flowers. From these and other observations, it was proved beyond doubt, that honey or sugar, not pollen, is essential to the formation of wax,—a secretion which, exuding from the rings of the bee's stomach, is sometimes visible in the form of scales.

Relative to wax and its employ, Huber further discovered
VOL. II.—13

that certain bees, larger than the other workers, are endowed with capabilities for secreting it on a much larger scale,—a fact which led him to divide the labours of the hive into two distinct classes, to which he gave the names of “Wax-workers,” and “Nurses,”—the employ of the former being chiefly to found the cells and provision the hive, while the cares of the latter are devoted more especially to the feeding and tending of the young, and to the completion of the combs when substantially founded by their stronger and better provided comrades. Herein has existed, from time immemorial, an insect pattern, which only civilised man has learnt to copy, of labour’s best lightener and assistant—its division.

In addition to pollen and honey, with wax hence derived, bees are accustomed to levy, from the vegetable world, another contribution employed in their works of architecture. This substance, as being chiefly applied outwardly and to the out-works of their waxen structures, is called *Propolis*, from Greek words signifying “before the city.” It consists of a brown resin, which was supposed long ago to be the collection of bees from trees producing gums of the same description,—a conjecture since confirmed,—Huber having seen them strip the resin from off buds of the wild poplar and branches placed in their way ; while Kirby observed them busy, for a like purpose, on the balsamic buds of the Tacamahaca.

In collection of *propolis*, as in that of pollen, the bee’s thigh panniers are in high requisition ; but, to avoid their being be-

gummed as well as beladen with this sticky resin, our little gatherer has to knead and render it less adhesive, before she transfers it from her fore feet to the convenient *corbeilles* appended to her hinder limbs.

With this vegetable gum the honey-combs, heretofore pure white, are varnished, and their edges strengthened and secured. It is with *propolis* also that all accidental holes and interstices are filled up; and the same substance is made, moreover, highly contributory to that scrupulous cleanliness for which bees are conspicuous. The mode wherein they carry out, in their waxen cities, the practice of this self-respecting and self-preserving virtue, is worthy of imitation by those who draw up sanitary regulations for the health of brick-built towns.

The removal of all things that offend infectiously, or, where this is impossible, the disarming them of their offensive qualities, stands, of course, foremost in the sanitary economy of the hive. In pursuance thereof, the dead bodies of intruding insects, stung to death for their temerity, are instantly cast out, whenever their size admits; but when too bulky for ejection, as in the case of a snail, the body, when deprived of life and withdrawn into its shell, is glued round the margin, thus fixed immoveable and innoxious, by help of *propolis*; but, should the slimy intruder happen to be shell-less, the same useful substance is employed more extensively to completely cover and embalm its body; thus preventing entirely the escape therefrom of all unwholesome effluvia.

Subsequent on the brief mention, as above, of the materials employed by bee architects, should follow, properly, a description of the way in which they are accustomed to work them up. We have never, ourselves, had an opportunity of following any of their wondrous operations as carried on within the hive, which, by the way, would seem by no means an easy matter, even when that hive is made of glass. We might easily, however, copy, in an abbreviated form, some at least of the relations given of their proceedings by Reaumur, the indefatigable Huber, and other bee historians; but these, shorn of their detail, would proportionately lose in interest.

Since, therefore, our account of bee workmanship cannot (consistently with our limits) be long enough to entertain, we shall make it so very short, as at all events not to weary. We would wish it, on the contrary, to stimulate, to serve just as an incitement to the abundant but not cloying sweets of Huber's delightful pages. There will be found in detail, ample and accurate,—*how* that, as a first preparatory step towards the construction of a comb, the bees (called Wax-workers) suspend themselves, from the empty interior of the hive, in necklace-like festoons, and thus remain motionless for hours together, apparently to rest, but in reality to secrete the wax which becomes visible on the rings of their bodies;—*how* that, in step the second, the Bee foundress leaves the group, clears herself a space, goes to work alone (hundreds of spectators watching her proceedings), gathers from off her body, kneads with

her mouth, then deposits the first portion of wax, in other words lays the foundation of the waxen city;—*how* this conspicuous individual, then retiring, leaves a second bee to imitate her example; then, in succession, a third and fourth, and so on, till a block or wall of wax is formed at top of the domed hive;—*how*, subsequently, the shapeless mass thus accumulated is excavated and moulded into honey-comb cells,—those admirable solutions of that difficult geometric problem which requires “A quantity of wax being given, to form thereof similar and equal cells of a determinate capacity, but of the largest size in proportion to the quantity of matter employed, and disposed in such a manner as to occupy the least possible space.” These conditions are exactly fulfilled in the six-sided cell of a bee, which is of a shape also the best adapted to its body. In what manner the little mathematician is led to the end desired is matter of dispute, whether it be the result of contriving mind, or consequent on the form of the jaws and other fashioning instruments; though betwixt these and the work produced there is no apparent correspondence. In either case, however, we must equally agree with Dr. Reid, that “Geometry is not in the bee, but in the Great Geometrician who made the bee, and made all things in number, weight, and measure.”

As the work of comb-making proceeds, we are presented with another wonderful example of the division of labour amongst Bee artificers. When the wax-workers have produc-

ed (as above noticed) first the material, then the cells in rough-hewn formation, there comes a second band whose employment is to examine and adjust the angles, remove superfluous wax, and give the work perfection ; while, attendant on these, is a third party which brings provisions ; of these, each opening her honey-bag, imparts refreshment to the thirsty labourer, who, without quitting her work, bends down her head to receive it. It would seem, therefore, that at home as well as abroad the toils of bee labourers are, even in a literal sense, not without their sweets ; and in their well-ordered, social, voluntary mode of working, we appear to see clearly pleasure mingled with their labour.

The above notices, slight as they are, of bee notabilities, must surely be sufficient to excite a wish for more knowledge of their proceedings, as detailed by accurate observers ; and not this only, but a desire also to become in person Asmodean spectators of the doings in waxen cities. These, in their foundation, progress, and completion afford, as we have just seen, abundance of *materiel*,—matter to amuse both eye and mind,—while the politics and passions of the little citizens offer (as elsewhere noticed) plenty of moral subjects for comparison and curious speculation. Be it also remembered, that, explored as the bee metropolis has of late years been, it has still its hidden mysteries much more worthy, we take it, of the trouble of unveiling, than the heart-sickening, heart-polluting, though greedily devoured, “Mysteries of London” and of Paris.

Many have prided themselves on their supposed knowledge in the mysteries of bee cities. Amongst these, Butler (not the author of *Hudibras*, but a clergyman who died about 1640, and who figures amongst Fuller's Worthies as a "painful preacher and a solid divine,") wrote a "Book of Bees," wherein (says Fuller) "as if he had been their secretary, he appears most knowing in the state mysteries of their commonwealth, whence one wrote (in Latin) on his book :—

“ ‘ Butler (he'll say who these thy writings sees,)
Bees counsel thee, or else thou counsell'est bees.’ ”

Yet the knowledge of Butler, as compared with and tested by that since acquired on the same subject is, after all, but foolishness.

Plenty of the worldly wise are disposed, doubtless, to look upon the study of bees, or of any such small people, as also altogether foolishness. We know how the mental appetite, accustomed to excitation by highly seasoned and unwholesome viands, is likely to lack relish for simpler fare, and how many, perhaps of our readers, may be inclined to condemn the sweets of knowledge derivable from bee-hives as utterly flavourless and insipid ; but let these take in evidence the experience, of the intellectual Huber for the fact, that communities divinely ruled, may become, as well as communities humanly misguided, objects of *intense* interest. Let them receive to the same effect the word of another,* who says, writing of bees, "*Je n'ai*

* Gelieu.

vu personne qui les aime médiocrement ; on se passionne pour elles !" Or, if classic opinion and ancient practice weigh more with them than "modern instances," let them remember how that Aristomachus of Soles devoted fifty-eight years to their study,—how that Philiscus the Thracian spent his whole life in forests for the purpose of observing them,—and how, finally, that Aristotle, Columella, and Pliny wrote of bees very largely, if scarcely with more correctness than Virgil, their poetic painter.

But some there are (though not we hope amongst our readers) with whom the tastes and pursuits of the wise and good weigh as nothing, and with whom the intrinsic interest attached to natural objects (could they even be forced to their study) would go for nothing too. These have no minds for the common wonderful—no hearts for the natural poetic, with both of which the works and ways of bees, and of insects in general, are fully fraught.

With such as these, vain would be the effort,

" When 'glows' the sun, and 'hum' the cheery bees,
And all the air is full of odours warm,
* * * * *
To fill the vacant mind with 'wondrous things,'
That Nature works in fields, and floods, and air."*

Supposing such despisers of Nature to be, as they commonly are, worshippers of Mammon, how can we possibly contrive to awaken their interest in the economy of bees? Why, only

* Howitt's Martyr.

through the bees' economic uses and the riches of the hive, if we could but give them hopes of making the same available—presently or prospectively—to the interest of *themselves*. They would not care a rush (how should they?) for the information of an American poet—the nature-painting Bryant—when he tells us how that

“The bee, a more adventurous colonist than man,
With whom he came across the eastern deep,”

is always (as becomes a wild-wood insect) the precursor of civilization in the giant forests of his Transatlantic clime. He there (or to speak more correctly) *she* there

“Fills the Savannahs with her murmurings,
And hides her sweets, as in the golden age,
Within the hollow oak. I listen long
To her domestic hum, and think I hear
The sound of that advancing multitude,
Which soon shall fill these deserts.”

To the strains of the poet (sing he never so sweetly) the ears of the mammon-worshipper—the mere utilitarian—are doubtless deaf enough; but the American poet has (or had) a quaker countryman, named (we think) John Schall, who, on the subject of bees, is much more likely to move a sordid spirit.

This gentleman, in the year 1845, was exhibiting in London his American barrel hives of wood, constructed on the humane principle of non-destruction to their busy inmates; and in connection therewith was the proposer of plans for bee cultivation on an extensive and profitable scale. Some persons were in-

duced, we believe, to adopt his method,—with what success we never heard. This, however, with all particulars of the apian scheme in question, might doubtless be easily obtained, and we would seriously advise such as are bent on golden experiments (or gilded, as they may happen to turn out) to try what they can make of the golden riches of the hive. May not the eye of the speculator foresee in the improved and extended cultivation of English bees the ultimate extinction of the colonial sugar-canes, streams of honey flowing through the land, and streams of gold, thence derived, flowing into his own coffers.

May not this speculative seer behold also, in the march of Puseyism, England—Catholic England—become not only a land of honey but a land of wax—of waxen tapers. May he not anticipate in Britain a very Mexico for bees and bees' wax, where, as at present in that most Catholic country, bees may be turned to enormous profit through the immense consumption of wax in church ceremonies.

Thus, with the lover of lucre, as well as the lover of Nature, bees are not without their claim to notice; but how shall we interest, in behalf of our humming favourites, the lover of fashion?

Why, here again, incongruous as our advocacy may seem, we must have recourse to Friend Schall. Did not the worthy broad-brim attract, at the Society of Arts, the special attention of the Prince Consort to himself and ingenious bee-hives? and was he not honoured, moreover, with a royal order for a

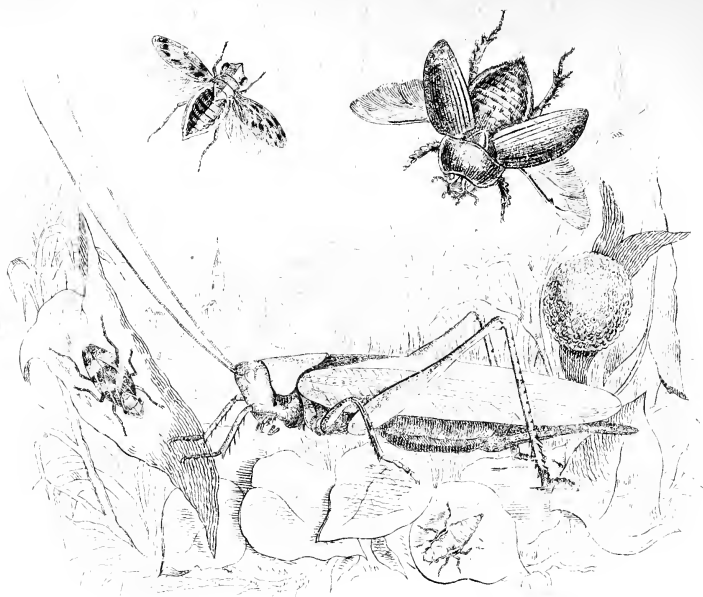
pair of those cleverly-constructed habitations, wherein, unmolested by "oppressive steams" of sulphur, the little workers may mingle business and pleasure through successive generations, and, occupied in their glazed tenements, may work under the very eye of royalty, and under the sunshine of that queenly smile wherein the quaker and his bees have basked together?

After this, what woman of fashion can fail to look upon a glazed hive, on the American, or some yet newer principle, as a piece of furniture quite as requisite to the balcony of her drawing-room as a mirror to its walls?

And believe us, my lady, when thou art tired of admiring thy person in the latter, thou mayest, on turning to the former, find therein no scanty material for the adornment of thy mind!



"Hardly of Business and of Pleasure"



INSECT MINSTRELSY.

“Sounds inharmonious in themselves and harsh,
Yet heard in scenes where peace for ever reigns,
And only there—please highly for their sake.”

“A populous solitude of bees and birds,
And fairy-formed, and many-coloured things,
Who worship [Him] with notes more sweet than words,
And innocently open their glad wings,
Fearless and full of life.”

If measured by their influence on the mind, those simple notes of harmony or discord, produced by many of the insect race, are of no mean importance in the scale of sounds. Their power must certainly, however, be attributed rather to associate

ideas than to any intrinsic excellence in the sounds themselves, which, by means of such borrowed attributes, have often indeed acquired a character and exercised an influence directly opposite to their own inherent qualities. It accords not with our plan to say much of insect foreigners, whether musical or mute; but we may cite, as the earliest and one of the most striking examples of what we mean, the song of the classic Cicada or Tettix—the *Tree-hopper*; by a misnomer—the *Grass-hopper* of the ancients. This was the Insect Minstrel to whom the Locrians erected a statue; some say for very love and honour of its harmony; others as a grateful record of a certain victory obtained in a musical contest, solely by its aid. The story goes, that on one of these occasions two harp-strings of the Locrian candidate being snapt asunder in the ardour of competition, a Cicada, lighting at the moment on the injured instrument, more than atoned for its deficiencies, and achieved, by its well-timed assistance, the triumph of the player.

Thus highly was this insect's song accounted of, even at a period when "music, heavenly maid," could scarcely be considered "young;" yet as various species of Cicadæ have been described by modern travellers, one can hardly suppose that any better quality than shrilly loudness can have belonged to the Tettix of ancient Greece.

We are told, indeed, by Madame Merian, that an insect of a similar description was called the Lyre-player by the Dutch in Surinam. The notes of a Brazilian species have been likened

to the sound of a vibrating wire; and those of another, in the swamps of North America, to the ringing of horse-bells. Similitudes these of sounds sufficiently agreeable; but contrasted therewith, and almost drowning them, come the discordant comparisons of numerous other travellers respecting the same or insects of an allied species. One is called by Dr. Shaw, "an impertinent creature, stunning the ear with shrill ungrateful squalling." The noise of a species in Java is described by Thunberg, as shrill and piercing as the notes of a trumpet; while Smeathman speaks of another common in Africa, which emits so loud a sound as to be heard at the distance of half a mile, or, when introduced into the house, to silence by its song the voices of a whole company. The mighty "waits" of the Fulgora, or Great Lanthorn Fly of Guyana, an insect not of the same but an allied family, has also obtained the name of "Scare-sleep,"—its din being likened to the sound of razor-grinding.

On the whole, therefore, it would appear pretty clearly that loudness is the main characteristic of the Cicada's song. Yet when we recognise, in this insect minstrel, the "Anacreontic Grasshopper," the "Son of Phœbus," the "Favourite of the Muses," the "Nightingale of the Nymphs," the "Emblem of perpetual Youth and Joy," the "Prophet of the Summer," we no longer marvel that its notes, however harsh, should have sounded melodious even in the ear of the polished Athenian.

To descend to present times and native performers, first,

there is our own familiar and representative, the Hearth Cricket, for whose crinking chirp even *we* can scarcely challenge much intrinsic merit, yet do we regard it as a song, and a merry one; and why? because the faggot always crackles, and the kettle sings, if not in actual, in imaginative chorus.

In like manner, the music of the Cricket's country cousin (of the field), or that of the Grasshopper, though designated by some, of more critical ear than pleasant temperament, "a disagreeable crink," can never grate harshly upon either ear or heart which are in themselves attuned to nature's harmonies; for to these, as it rises from the dewy ground, it assumes the tone of an evening hymn of happiness, mingled in memory if not in hearing with evening bells and the shouts of emancipated village children. For the revival, doubtless, of some such associate memories, even the grave Spaniard is said to keep these insects after the manner of birds of song; and those that like it may do the same in England, Gilbert White assuring us, on trial of the experiment, that the field cricket, while supplied with moist green leaves, will sing as merrily in a paper cage as in a grassy field.

To the man of transparent skin and opaque fancy—or no fancy at all—the hum of the Gnat is suggestive, we know, of nothing but angry cheeks and swollen temples, with corresponding sounds of pshaws! and buffets; but to those who are less outwardly but more inwardly sensitive, the "horn" even of this insect blood-hunter is not without its melody,

with sylvan accompaniments, such as the ploughboy's whistle "o'er the lea," and the gurgle of pebbly brooks, red in the glowing sunset.

When and wheresoever a bee may happen to flit, humming past us, be it even near an apiary in the Adelphi, or a balcony hive at Hammersmith, is one not borne at once upon her musical wings to the side of some heathy hill? and does one not forthwith hear in concert the bleating of flocks, the bursting of ripened furze-pods, and the blithe carol of the rising skylark? or, our thoughts taking a turn more homely, we listen in fancy to the sound of tinkling cymbal played by rejoicing housewife to celebrate and accompany the aërial march of a departing swarm.

Thus sweet and infinitely varied is the concert of concordant sounds, all of the allegro character, which may be assembled for the pleasing of the mental ear, even by the simple and single, and passing strains of the above and other insects which make melody in their mirth; and then how numerous are the correspondent images—glowing, smiling, dancing, waving, glittering,—which are wont at their bidding to be conjured up before the mental eye! Glowing embers—smiling flowers—dancing leaves—waving cornfields—glittering waters—all intermingled in a haze of merry motion—an imaged dance of life got up within "the chamber of the mind," at the stirring of, sometimes, but a note of Nature's living music.

But besides the sensations of involuntary pleasure which we have often owed, without knowing it, to Insect Minstrelsy, it affords (though on this subject few perhaps ever think) matter for thought-inquiry, concerning the way in which it is produced. It is all of an instrumental and not vocal character; and, among the varied mechanisms of natural objects, the instruments of sound furnished to insect musicians are none of the least curious.

That of the celebrated Cicada (the classic lyre-player)—an insect rarely seen in England, but still common in the south of Europe,—consists, as described by Reaumur, of a pair of drums fixed one on each side of the trunk; these are covered on the exterior of two membranaceous plates, usually circular or oval; and beneath them is a cavity, part of which seems to open into the belly. These drums form however but one portion of a compound instrument; for besides these, there is attached to another drum-like membrane in the interior a bundle of muscular strings; on pulling which, and letting them go again, a sound can be produced even after the animal's death. For the issue of this sound a hole is expressly provided, like the sound-hole of a violin, or the opening in the human larynx.

The chirp of the cricket, both of house and field, is said, by Kirby, to be produced by the friction of the bases of the tegmina, or wing-cases, against each other, at their base; but these insects are also provided with their drums. In the

large green field cricket* this drum is described† as a round plate of transparent membrane tensely stretched, and surrounded by a prominent edge, or nervure. The instrument is to be found in that part of the right wing-case which is folded horizontally over the trunk, and is concealed under the left, in which also there is a strong circular nervure corresponding to the hoop of the drum beneath. The quick motion with which these nervures are rubbed together producing a vibration in the membrane, is supposed to augment the sound.

What we call familiarly the singing or chirping of grasshoppers and locusts, is outwardly produced by application of the hind shank to the thigh, rubbing it smartly against the wing-cases, and alternating the right and left legs; but these, as well as the cicada and the cricket, are provided with their “petits tambours,”—membrane-covered drums, or cavities of somewhat varied construction, to augment the sound of exterior origin.

Be it here observed, that the above-named professors of the “joyeuse science”—the cicada lyre-players—the crickets of our field and household bands—the roving grasshopper troubadours, are all, like the feathered minstrels of grove and garden, of the masculine sex; each doubtless playing his mid-day sonata, or evening serenade, with intent mainly to tickle the ear and fancy of his listening lady.

On the muteness of the latter was founded a sly joke on

* *Acrida viridissima*. (Vignette.)

† By De Geer.

the Xantippes of antiquity, which is equally applicable both to scolding and to musical matrons of the present day. "Happy," says Zenachus the Rhodian,

"Happy the cicadas' lives,
Since they all have noiseless wives!"

The so-called "Horn" or "Trumpet of the Gnat," would seem no wind instrument at all; its buzz, or hum, as well as that of other two-winged flies, appearing, says Kirby,* to be produced by friction of the base of the wings against the chest. This conclusion would seem, however, scarcely to be reconciled with the fact remarked by Rennie,† that they sometimes, especially towards autumn, fly in silence, although, when flying, the base of the wings must of necessity rub against the chest.

"The roving bee proclaims aloud
Her flight by vocal wings."

So says the poet; and, in support of the accuracy as well as elegance of the dictum, he has the testimony of that careful naturalist Swammerdam, who opines that her humming proceeds from the wings alone, especially the small membranaceous pair at the shoulders, when played upon by air propelled from the subjacent air-tubes or spiracles, aided by certain adjacent cavities which open wide apertures under the wings. That the wings alone do not, however, produce the bee's hum, seems sufficiently proved by an experiment of Hunter's, wherein he found that, after its wings were cut off, the poor

* Introduction to Entomology.

† Insect Miscellanies.

insect could still utter (as well it might) a shrill peevish sound ; and the same is confirmed by the silent flight of many insects of the same order.

Speaking of the hum of bees, which, though monotonous, is, through association, one of the most delightful of all insect harmonies, Kirby remarks, " that it ceases when she alights ; that of the wasp and hornet is more sonorous. The combination of humble-bees may be heard from far, gradually increasing, till, when in its wheeling flight it passes close to the ear, almost stunning it by its sharp, shrill, deafening sound."*

The buzz of flies has been supposed to arise from the striking of their wings upon the air ; but this would seem disproved by the silent progress of many other rapid fliers, such as the dragon and crane flies ; also by the power of some to produce a loud buzz when not upon the wing. Rennie† cites, as an example, the buzz of a wasp-fly, when resting, apparently motionless, on the window. Upon close observation, a vibratory tremor, similar to that of a harp-string, though so rapid as to be almost invisible, was perceptible in its wings ; and when these were laid hold of, the sound ceased. It is supposed by the same author that this sound was not referable, simply, to any muscular movement, but that it must have arisen either from air playing on the membranaceous edges of the wings at their origin, as in the case of an Æolian harp-string, or by the stroke or friction of some internal organ upon the roots of the

* Introduction to Entomology.

* In Insect Miscellanies.

nervures.* The drone of the dung beetle, the "Drowsy Dorr," which in the still twilight of a summer's evening,

———"Come brushing by
With buzzing wing"——

owes also its origin to friction,—that of the wing-cases upon the base of the wings. Loud hummers of the same order are the musk beetle, the cock-chafer, and the beautiful green chafer of the rose, which never fails, in alighting on the bosom of his favourite flower, to salute her with a wing sonata of delighted homage.

The tones of insects, as well as the songs of birds, have been deemed worth the trouble of notation. Gardiner, in his "Music of Nature," tells us that the gnat hums in the note A on the second space; the death-watch calls (as the owl hoots) in B flat, and is answered in G; the three notes of the cricket are in B; the buzz of a bee-hive in F; that of the house-fly F in the first space; the humble-bee an octave lower; the cock-chafer D below the line.

Although in no case proceeding from the mouth, the sounds we have been hitherto regarding as instrumental music are no less to be considered as a veritable language, serving, in lieu of voice, to communicate information and express passions, such as fear, anger, pleasure,—above all, love, that ruler of the rest, which with insect no less than man may be justly denominated the "Soul of Song."

There is a peculiar sound often heard issuing from a bee-hive previous to its sending forth a swarm,—a sharp, clear hum,

* Insect Miscellanies, p. 91.

† Vignette.

produced, seemingly, by the vibration of the wings of a single bee. This has been interpreted into an harangue uttered by the young queen, and intended to inspire a portion of the community with courage to go forth, and colonize a new empire. On the conclusion of this inspiring address, her tone changing to one of supplication, aided even by groans and lamentation, she has been supposed, turning from the people, to address the queen-mother of the hive, and, as candidate for a new throne, entreat her permission to lead the division about to emigrate. To this effect, at least, is the purport of the royal speech, as translated, certes somewhat freely, by the ear and pen of Butler, who wrote of music as well as of the "Female Monarchie;"* of the latter with such marvellous minuteness as to draw, from one of his admiring readers, the poetical apostrophe before quoted,† to the effect that he must have been admitted into the counsels of the hive.

We are not called upon certainly to give implicit credence to all that this initiate in bee language has imparted of its meaning, nor shall we positively assert, with Godart, till we have ourselves ascertained the fact, that there is in every nest of humble-bees a trumpeter, who at early morn, ascending to its summit, sounds a reveillé with its vibratory wings of a quarter of an hour's duration. But although on these points we may at least suspend our judgment, we have plenty of common evidence, plain even to our common perceptions, that insects

* Female Monarchie of Bees, 1634.

† At page 209.

can make audible their anger and their fears. These we may hear intermingled in the sharp, impatient scold of the first humble-bee we may venture to imprison for a moment in the hollow of our closed hand; and we may listen to the fly's expression of intense terror, in the peculiar screaming buzz which she utters, when—and *only* when—in the grasp of her arch enemy the spider. The same passion in different degrees is expressed also by the unwonted creaking of various beetles when caught or molested.

It has been suggested that the hum of insects, while upon the wing, may be useful as a means of informing them by modulated sound of their proximity to or distance from obstructing objects. Most of the insect minstrels of whom we have been speaking, being heard at early dawn, in mid-day sunshine, or at dewy eve, may be considered as the singing day-birds of their race; but opposed to these they have their birds of night—their bats and screech-owls—in a company of lugubrious performers, headed by the Death's-head and the Death-watch. But of these in another place, and at a more appropriate season; for to ring the changes here upon their boding melancholy strains would be to imitate the medley arrangement of a fashionable music meeting, where alternate impressions of the gay and grave—the worldly and the solemn—are so contrived as to out-press each other, and thus leave upon the mind scarce any impress whatsoever.

But it is chiefly in the aggregate—in the multitudinous combination of summer sounds, to which they so largely contribute—that Insect Minstrelsy plays its most important and pleasing part—

“Resounds the living surface of the ground :
Nor undelightful is the ceaseless hum
To him who muses through the woods at noon.”

Besides those leaders of the band already noticed, choral multitudes made up of creatures covering earth and filling air, many too small, singly, for perception of eye or ear, aid largely to swell those pervading harmonies more felt than heard, which rise with the first breath of spring, and expire with the last sigh of autumn. This insect choir, descending in harmonious gradation (and scarcely completed by the motes of music which float upon the sunbeam) has been thus described by a celebrated French poet,* one of the very few of them endowed with a heart as well as an eye and ear for the delights which nature offers through our senses.

“Comme ils gravitent en cadence !
Nouant et denouant leurs vols harmonieux.

* * * * *

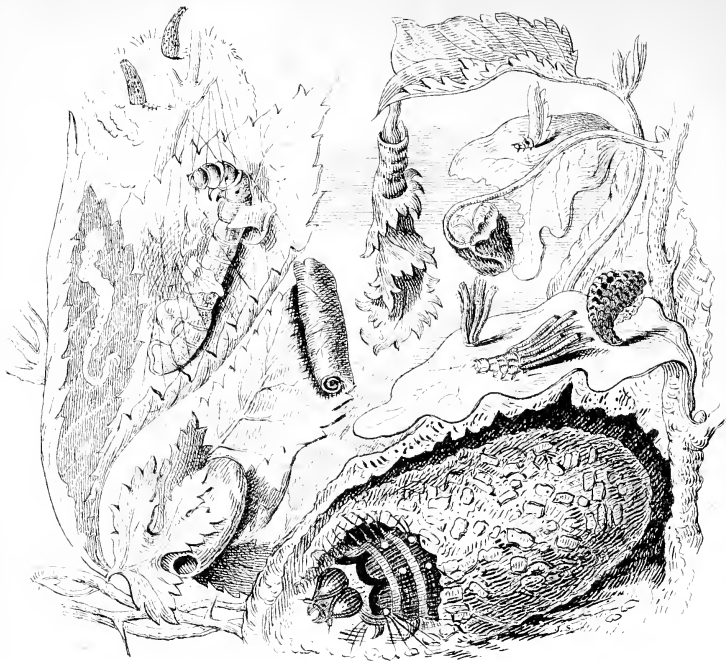
L'œil ébloui se perd dans leur foule innombrable,
Il en faudrait un monde à faire un grain de sable,
Le regard infini pourrait seul les compter.
Chaque parcelle encore s'y poudraie en parcelle.
Ah ! c'est ici le pied de l'éclatante échelle,
Que de l'atome à Dieu l'Infini voit monter.”

* De Lamartine.

Insects may be the last in the scale of animated beings capable of making music to their Maker's praise, and the strains of some of them may be the lowest in the scale of sounds perceptible to us. But if, with all true poets, we can hear sounds of worship in the murmuring sea and running waters, and in every tree played on by the breath of heaven—if we have an ear for these, and the like harmonies,—for “the harp of universal nature, which is touched by the rays of the sun, and whose song is the morning, the evening, and the seasons,”—if for these, the voices of things inanimate, we are gifted with a perceptive ear and receptive heart, can we refuse to reckon as music the softest vibration of the tiniest insect's wing, because it is an audible token of happy existence, and, as such, a hymn of gratitude to the Giver of the boon of life?



The classic Cicada, the grassy Gryllus,
and the deep-toned Dor.



MOTHS AS OPERATIVES.

— “Millions of spinning worms,
That in their green-shops weave the smooth-haired silk.”

— “The flowery leaf
Wants not its soft inhabitants. Secure
Within its winding citadel, the stone
Holds multitudes.”

HAVING “shewn up” already some of the most glaring enormities committed by moth caterpillars in the character of “Destructives,” we shall now, in justice, advocate their claim to the title of Operatives. We might even consider them under the name of Conservatives, both general and particular ;

—general, because even in their very ravages, wherein they feed themselves for the support of other creatures, they are made subservient to upholding the universal government of creation; and particular, because, in a very remarkable degree, their every proceeding has for its object the conservation of their kind; or, to speak more accurately, because all their doings, in obedience to this common law of nature, are so strikingly adapted to fulfil it.

This principle of conservatism is carried out by moth caterpillars in a multitude of ingenious works, wherein, according to their species, or rather according to their varied exigencies, they become artificers or operatives, capable of being distinguished by distinct denominations, correspondent with many of those which are applied to human occupations.

We believe it was Reaumur, who, with the lively fancy of his nation and character, first thought of arranging these caterpillars, as well as some of the *solitary* workers among wasps and bees, into the several crafts of “Stone-masons,” “Carpenters,” “Tent-makers,” “Muff-makers,” “Flask-makers,” and “Miners;” each of these mechanics exercising, in addition to his particular art, that of the weaver, common to them all; from the silk worm—first manufacturer of royal robes—down to the tiny grub of the clothes’-moth, making, as we have seen, its own little body-coat, either from wool or from the produce of its cousin’s labour.

With respect to the solidity, if not the ingenuity of his

fabric, let us begin with the "Stone-mason."* He is the caterpillar of a little moth with wings of gilded bronze, smaller but much resembling the clothes-moth, whose family name (*Tinea*) he also bears, although in habits and locality, as well as the material of his workmanship, he stands widely contrasted with the destructive of the wardrobe. Instead of reposing, like the latter, in "Ladye's Bowre," encased in garment of wool, or silk, or down, and regaling on the same soft and delicate substances of animal derivation, our hardy little operative finds himself, on emerging from the egg, exposed without protection on the surface of some lichen-covered wall. Instructed, however, by that kind Power which in this very lichen provides him with an ample store of provender, he knows perfectly well how to meet the other exigencies of his exposed position. Of what avail to him would be a silken or a leafen tent, liable to be overset and borne away by the summer breeze? A stone-built tower suits his purpose better; and such is the structure he proceeds forthwith to erect. By help of "tooth and nail," he detaches small particles of the stone or brick with which the wall supplies him,—binds them together with silk and a sort of natural cement, possessed in common with his kind,—and thus, after four-and-twenty hours of incessant labour, completes for himself a habitation of sugar-loaf form, just large enough for his comfortable accommodation, and under cover of which he proceeds to perambulate his world of wall, and regale on the vegetable viands with which,

* Vignette.

for him, it is bespread. Well might it be observed, that "never was Roman soldier so laden with the weight of arms and armour as is the little tenant of this stone-built tower; but he both bears it and moves under it with an apparent facility which proves his proportionate amount of muscle to be infinitely greater than that allotted to the mightiest of human frames. When the caterpillar portion of his life is over, and he is about to enter on that quiescent state which precedes the development of his perfect form, he attaches to the wall, by silken cables, the hitherto moveable tenement which has accompanied his rambles. Within the interior of this now immoveable pyramid, he becomes a chrysalis, and then, leaving it behind (a self-erected monument and tomb of his remains) he ascends on his bronzed and gilded pinions through an opening left for the purpose at the top.

From their employment of a material next in solidity to stone, namely, wood, the "Carpenters" among moth operatives would seem best placed after the "Masons," although widely contrasted with the tiny builders last described both in size and habits. At the head of this carpenter craft stands the Cossus, or caterpillar of the Great Goat Moth*—a large, smooth, unsightly crawler of a lurid red and salmon colour, black-headed and black-clawed, whose extensive galleries, chiselled through solid trunk of willow, oak, and poplar, attest him to be a mechanic of only too much industry. In Middlesex and adjacent counties he drives especially a most

* Vignette.

flourishing business. A carpenter is said to be "known by his chips;" but the artizan in question, as if aware that his operations are all trespasses, swallows (after the fashion of some detected thieves) every particle of the saw-dust and shavings which his trenchant jaws produce. In summer he is content thus to proceed working and eating his way through the winding wooden tunnels which afford him sufficient shelter against all enemies—wind and weather included; but as soon as the gales of autumn whistle through the thinned branches of the trunk he inhabits, he begins to provide himself with a more seasonable habitation. With this intent he widens a portion of his gallery into a roomy chamber, and, no longer satisfied with bare wooden walls, proceeds, by the exercise of his native skill in weaving, to hang them with an impervious tapestry—a fabric (to use the words of a modern naturalist) "as thick as coarse broad-cloth, and equally warm, composed of the raspings of wood scooped out of the cell and united with strong silk.* In this snug dormitory he passes the winter, in an idle fast, to resume his labours and feed with the return of spring; for this master Carpenter is a long liver, working, and literally living by his work, for the space of three years. At the end of this period he casts aside his working (or caterpillar) garb, throws by his tools, and after an aurelian slumber, passed in a summer cell, lined with a lighter tapestry than that occupied in winter, he thence emerges (a dark-brown

* Rennie.

beautifully shaded moth) to repose by day and fly by night, till required, by one of the economies of nature, to furnish the supper of a bat or owl.

As the greatest Emperor of Russia was all the greater for having once been, by choice, a shipwright, so the great "Emperor" of moths is all the worthier of note for being always, by birth, a "Flask-maker." The art by which he works his way to the royalty of his winged estate may perhaps be more properly considered as that of weaving, wherein he shows himself, in truth, a king or deacon of his craft. Having prepared for his labours by feeding on the tree, usually a willow or black thorn,* which sheltered the infancy of his caterpillar life, he begins, towards September, to prepare himself a private chamber, but of no common construction, for the mysterious process of transformation. The peculiar excellence of this royal cocoon consists, firstly, in its texture, which is of silk, so thickly woven as almost to resemble leather; secondly, in the elegance of its shape, which has been compared to that of a Florence flask; and thirdly, in its singular and ingenious formation. Instead of being wholly closed, like the cocoon of the silk-worm and most others, this has a small circular aperture formed at its upper end, by the convergence of elastic narrow points. Within and beneath these, and serving as a double defence, the imperial artificer weaves also a canopy, which hangs suspended over his royal head while wrapped in his aurelian slumber. When the time arrives for

* We have had a specimen found and fed upon the *strawberry*.

his coming forth, the winged Emperor has only to push against the elastic points above him, which, thus opened, reclose after his egress, and leave the flask-shaped tenement entire and unimpaired.

The "Emperor,"* as its name imports, is one of the largest and handsomest of our English moths; its prevailing hue (grayish tinged with purple) being banded and waved with white, purplish, and dark brown. At the point of each anterior wing is a patch of purple, and in the centre of all a large black and white ocellus, or eye-like spot. It is said by Curtis to be found frequently in most parts of England. The caterpillar is green, with black bands, and pink or yellow tubercles, hairy and star-like.

From this imperial, flask-making weaver, we descend (an abrupt transition) to the tiny tent-maker, which, though tabernacled in the frail tissue of a piece of leaf, belongs to the same *Tinea* family as the sturdy little mason whom we have seen to build himself a tower of brick or stone. Those who in a green leaf, or a leaf turned yellow, are accustomed to see a leaf and nothing more, will acquire large conceptions even of a single leaf, when led to consider, that while to some among the insect million it furnishes an extensive plain, to others, it is absolutely a tented field. When the summer breeze sings cheerily through a hawthorn hedge, or dances merrily with the boughs of oak or elm, it is not with leaves

* *Saturnia pavonia*.

alone that the zephyrs are making sport. Mischievous rogues ! They are laughing also at the panic and commotion they create among the tiny tribes which people those pleasant places, tossing them now here now there, while our Insect Arabs, with other shelterless wanderers, have much ado to support themselves on the quaking, shaking plains, which, bearing their light pavilions, they are accustomed to perambulate.

The elegant and curious erections of these tent-making caterpillars are commonly to be seen on various forest and fruit trees, especially the elm, oak, hawthorn, and pear, of which the leaves furnish them at once with food, and material for the construction of their habitations. These are usually about a quarter of an inch in length, and being formed out of pieces of leaf, assume, as they wither, a *feuille-morte*, or golden hue.*

By depriving one of these tent-makers of its habitation, we entail on it the necessity of constructing another, which, when furnished with material for the purpose, it will be sure to do, under our inspection, since, as was observed even by Pliny of the clothes-moth, it will rather die than feed unprotected. The way in which it goes to work in the shaping, cutting out, joining, and elevation of its tent, has been minutely described by Reaumur, also by Rennie, from whose "Insect Architecture" we subjoin a few details of the *modus operandi* of one of these clever artificers found upon the hawthorn. In commencing a new tent after having been dislodged

* Vignette.

from its old one, its first operation was to eat through one of the two outer membranes which enclose the pulp of the leaf, and then, by consuming the latter, to make a cavity large enough to contain its body. When thus lodged between the two membranes of the leaf, rendered transparent by removal of the pulp, the subsequent movements of the little artificer were easily watched, and proved not a little interesting as it proceeded to make its tent with the membranes thus prepared, using its mandibles (or jaws) as a tailor his scissors. This operation, as remarked by Reaumur, is rendered by the particular curves required, one of no less nicety than the cutting out of a coat, the membranes having to be shaped convex on one side, concave on the other, and at one end twice as large as on the opposite. Beginning at the broadest extremity, the insect gently bent the membranes on each side, by pressing them with its body thrown into a curve. When thus shaped, but before cutting them, it proceeded to join the two edges, securing them firmly with silk, before it made a single incision to detach them.

“Having thus joined the two edges along one of the sides, it inserted its head on the outside of the joining, first at one end, then at the other, gnawing the fibres till that entire side was separated. It proceeded in the same manner with the other, joining the edges before it cut them; and when it arrived at the last fibre, the sole remaining support of its now finished tent, it took the precaution, before snipping it, to moor the

whole to the uncut part of the leaf by a cable of its own silk. Consequently, when it does cut the last nervure, it is secure from falling, and can travel along the leaf, carrying its tent on its back, as a snail does its shell.”*

There is commonly to be seen about midsummer, upon leaves of oak, hazel, dock, and other plants, what, on a cursory glance, appears a bundle of little bits of stalk and straw, accidentally collected and combined. On looking closer we find, however, that the pieces are arranged longitudinally side by side, and much too regularly to have come together hap-hazard. We shall perceive also that among several of these Liliuputian fagots, some are fixed perpendicularly to the leaf, while others are in motion over the surface. The latter are attending the progress of their occupants, each a small prettily-striped caterpillar, which, with head and shoulders protruded, thus travels under cover of what we may call a tent of sticks. The sticks, however, which cover its exterior, form in fact only a protecting palisade attached to a silk-woven central case, the real tent which surrounds the body of its ingenious architect.

The “muff-makers” among moths do not show as much ingenuity as the moths among muffs in the manufacture of their body-coats; but they display even superior tact and shrewdness in the appropriation of a ready-made article, admirably adapted to serve their turn. The muffs in question are of vegetable fur, that short silky down which clothes the seed-catkins of the palm-willow, and is often chosen by a certain

* *Insect Architecture*, p. 226.

moth caterpillar to clothe himself. With this felonious intent, he burrows into the seed for the protection of which the furry coat was originally designed, lines it with silk, detaches it from the parent stem, then walks away clothed *à la Russe*, to the annihilation of some incipient willow. These vegetable muffs, with their insect appropriators, are sometimes found floating on the waters beneath the pilfered tree, and it is suggested by Rennie that the buoyant material of this muff-like tent might be intended to furnish its little occupant with a life-boat when blown from off its native willow.

The heads of burdock, with which as troublesome hangers-on most people are acquainted, afford another and common instance of the appropriation of seeds by moth caterpillars, which convert them to the double purpose of food and fortification. Every burr or head of burdock, when arrived at maturity, and divested of its hooked appendages, consists of a collection of oblong, flattish, hard-coated brown seeds, arranged circularly, close together. Of these seeds we have been in the habit of laying up a winter store for the consumption of a pair of favourite gold-finches, which devour them with a seeming relish inferior scarcely to that which they evince for a meal of thistle or teasle-seed.* To separate this, their burdock

* So very hard-coated are the seeds of the burdock, that after they have become quite dry, we have found it requisite to soak them in boiling water to render their contents come-at-able by the bills of our goldfinches. The damp earth on which they fall renders them no doubt equally accessible to biped consumers out of doors. Goldfinches in a state of nature would seem to live wholly on the

corn, from the chaff and numerous minute hairs by which the grains are surrounded, we are accustomed to rub it through a piece of coarse open muslin; but in breaking up the burrs for this purpose we have often found an assemblage of the seeds (sometimes as many as ten or a dozen) so firmly joined together that to separate them has been no easy matter. When, however, forcibly torn or cut asunder, there comes to light, embedded in the centre of the united seeds, a little white, brown-headed caterpillar, the agent of their firm conjunction and the devourer of their bitter substance. This is the descendant of a small gold-brown moth, which, scattering her eggs upon the heads of burdock, thus secures to each of her progeny a provision through the autumn, and a safe asylum for the winter. Having conjoined, apparently with gluten, a group of adjacent seeds, each caterpillar burrows into and feeds in solitude upon them. In so doing, it forms a capacious cavity, which, after lining with a silken web, it appropriates as its dormitory through the bitter season. And a secure asylum does the little slumberer possess! The burr of his occupation may be shaken on its stalk, borne to the earth, and despoiled of its grains by the blasts of November; but, protected by the hard tough covering of the cemented seeds which wall him round, his central chamber remains impervious to wet and cold. Under its cover he becomes, in May, a little brown chrysalis, to emerge, in June,

bitter seeds of *compound* flowers—those of *dandelion*, *knap-weed*, *thistle*, *teazle*, and burdock seeming all in turn equally acceptable to our favourites.

a winged image of his parent moth. Thus, at least, it proved (with the occupants of some of those seed-built fortresses which we kept through winter in a box) out of doors; their appearance as moths may be somewhat later.

There is another and numerous company of caterpillar artisans, which, from their mode of leaf appropriation, have been designated Leaf-rollers. Though the labours of this industrious class do not correspond (like the above) with any particular craft of human exercise, they are much too ingenious, as well as in their aggregate of mischief too important to be passed over without notice, either here or within "their green shops"—the gardens, hedges, forests, where throughout the summer they are to be seen incessantly at work. The rolling or the folding of a leaf may be for our handy fingers but a simple operation; but it becomes a work of wonder when performed by a *worm*, which, besides *rolling* or folding, has moreover to retain its verdant scroll or turn-over in these artificial forms, the leaf being thereby converted to a double purpose, that of affording, by its outer folds, a cell of protection, and, by its inner, a magazine of fresh provision to be consumed under cover.

There is scarcely a single tree or plant which does not afford material for some caterpillar of the leaf-rolling crew, which, according to their species, are accustomed to exercise their ingenuity in forms of infinite variety. That of the simple scroll* is very commonly exemplified in the leaves of the lilac

* Vignette.

and the oak, almost as soon as they expand. These are formed by rolling the leaf from its extreme point towards the stalk,—an operation which the caterpillar is only enabled to accomplish by the aiding exercise of its art of weaving, since it is by silken threads attached to the leaf that he contrives to pull it into the desired form, wherein it is retained by silken braces. These hold-fasts, which to the roll of the lilac-leaf are comparatively slender, are numerous and strongly doubled in that of the oak, to meet, seemingly, the greater resistance of its stiffer fibre. The leaf-rollers which thus presume to bend to their purpose the foliage of the forest's monarch (and that often to a prodigious and most mischievous extent) assume, in the month of June, the shape of little green moths,* which, pretty and innocent as they look, are progenitors of caterpillar marauders resembling those which they have been themselves.

The leaves of the lilac are as often rolled in their length as in their breadth; but, when thus disposed of, the rollers are of a different species, being sprung from the eggs (one on each leaf) laid thereupon by the lilac-tree moth, a pretty insect, the outline of whose chocolate-brown wings resembles, when she is at rest, the form of a bell. The mode by which her caterpillars effect their operations is thus described by Mr. Rennie:—“As soon as [one of them] is hatched, it begins to secure itself from birds and predatory insects, by rolling up the leaf into the form of a gallery where it may feed in safety. We have

* *Tortrix viridana*, (green oak moth).

repeatedly seen one of them, when just escaped from the egg, fix several silk threads from one edge of a leaf to the other, or from the edge to the mid-rib; then, going to the middle of the space, he shortened the threads by bending them with his feet, and consequently pulling the edges of the leaves into a circular form, he retained them in that position by gluing down each thread as he shortened it.”* Certain leaves are somewhat doggedly disposed to follow their own bent, in preference to that which their insect fashioners attempt to give them; and in some of these cases the rolling artificers, after having done their utmost to bring them together by pulling the reluctant edges of their stubborn material, fill up, by spinning, the open space between them.

Such is the proceeding of a very common caterpillar of a greenish colour spotted with black, which commences operations in early spring, upon the nettle.† The leaves of the same plant are often, in July and August, found folded, edge to edge; but the constructor and occupant of the verdant cell thus formed, is no moth operative but the caterpillar of the “Admirable” or “Alderman Butterfly.” That of the “Painted Lady” is also a leaf-roller; and the rigid material which it contrives to bend to its purpose is usually a leaf of thistle.

The leaf-rollers above-mentioned are only a few of those

* Insect Architecture, p. 160.

† See for this caterpillar’s mode of weaving, ‘Insect Architecture,’ p. 164.

most commonly met with, and there are others which display even a greater amount of ingenuity in their instinct-guided operations. Of these there are many detailed descriptions; but, except as *leaders* to observation, these are somewhat tedious, and, unless much illustrated, not easy to understand. Were it even otherwise, our business, like that of the insect artificers under review, is that of compression; and, as these little weavers shorten their silken threads to draw their leaves into narrow compass, so must we manœuvre with their ingenious labours to bring, even a few of them, within the limits of a descriptive essay.

Portions of leaves, as well as entire ones, are sometimes employed in the operations of leaf-rolling caterpillars, which, in these instances, using their jaws with all the precision of well directed scissors, manage to cut out, but without entirely cutting *off*, a piece of material shaped exactly to their purpose. A worker of this description is a little smooth greenish-white caterpillar, which, out of a piece of sorrel leaf thus excised and not detached, forms a sort of conical pyramid, composed of five or six enwrapping folds. Having cut out the required segment, the cunning artificer rolls it slowly up by means of threads attached to the surface of the leaf, “and then, having cut in a different direction, *sets the cone upright by weaving other threads attached to the centre of the roll and the plane of the leaf, upon which it throws the weight of its body.*”^{*} After having devoured the interior folds of this ingeniously constructed cone,

^{*} Insect Architecture, p. 167; also Reaumur.

its little inhabitant, still protected by the exterior walls, weaves within it a silken cocoon, and undergoes his final transformations.

A June ramble in Highgate wood furnished us, last summer, with two most elegant specimens of the leaf-rolling combined with the leaf-cutting art. A number of young oak-leaves having been each roughly cut across the centre from the edge up to the mid-rib, the half comprising the tip was formed into a hard compact roll, of exquisite neatness, closely resembling a barrel-button.* In the centre of each was a bright yellow egg, but how it had got there (seeing that there was no visible opening for the ingress or egress of its layer) was and remains a question as puzzling to us, as, according to Pindaric record, was once to royal brains the advent of the apple in the dumping. Neither do we know at present by what ingenious insect these oak-leaf buttons were manufactured, or eggs deposited within them, not one of the latter having come to light, in a living form, out of numerous rolls which we have had in our keeping for above a year; this is owing perhaps to lack of moisture; for it has since occurred to us that the fall of the leaves must supply their button-like appendages with a bed of damp earth or moss, wanting in the box to which we consigned our gathered specimens.

In the same wood, on the same day, we noticed certain leaves of the hazel, cut and rolled in a form much more graceful if not more curious than the above. These leaves, as

* Vignette.

those of the oak, were severed, only more smoothly, across their centres, the main stalk alone being left undivided; but the terminating halves, employed by the little artificers of the oak to form their barrel-buttons, were, in this instance, simply rolled or twisted into a spiral form, so as to have the appearance, in their suspension by the mid-rib, of an ear-drop, or a pendant tassel,—the serrated edge of the hazel-leaf adding to the elegance of their appearance.* Whether these pretty leaf pendants are the work of a caterpillar or some other insect is at present unknown to us; for at the time they first attracted our observation we could discover no living tenant within them, and in this June of the present year we have been equally unsuccessful. In both cases our observations were probably over late, the twisted portion of the leaves having already turned brown, in evidence that they had been for at least some days nearly severed from their living counterparts.† With one more specimen of the skill of Leaf-rollers, we must close our brief notice of their ingenious labours. On a cabbage rose-bush, at Hornsey, we observed, in June of last summer, a case of horn-like shape, wide and open at top, and pointed at bottom, formed out of a leaf of the same shrub, twisted spirally, and suspended by silken strings to the main stalk of a group of young leaflets. One of the latter, nearest to the mouth of the pendant horn, displayed recent marks of excising jaws; and presently, protruding from the open end of this curious

* Vignette.

† The artificers above referred to we have discovered since to be the caterpillars of a prettily variegated green moth.

leaf-case, appeared the head of a green Caterpillar, which, thus protected, resumed its juicy meal.

Having gained possession of master Leaf-roller and his ingenious tent, by cutting off the branch to which they were appended, we placed it in a flower-pot filled with mould, and when the twig withered took care to plant beside it a succession of others. To these our tabernacled feeder never failed to transfer himself and habitation, slinging the latter, as we originally found it, close beside the leaf of his pasture. Increasing in bulk and length as he thus regaled, he soon outgrew his twisted tenement, which he then cleverly contrived to lengthen by the addition of a piece of fresh leaf nicely joined and fitted to the larger and upper end of the spiral horn. Thus far, and no farther, can we carry, from observation, the history of this artificer in rose leaves; for supposing that when his caterpillar life approached its close, he would either quietly spin himself up in his case, or bury himself in the earth of the flower-pot, we trusted too confidently to his apparently non-roving propensities, as was proved one fine morning in July, when we found our Leaf-roller absent without leave,—his habitation being left (vacant) behind him. That, barring accidents, he subsequently became a moth, there is every reason to conclude from the nature of his constructive labours while a caterpillar.

Lastly, a word or two about the Leaf-miner; he, like the Leaf-roller, and the Leaf-tent-maker, holds his verdant estate by the

slight tenure of a fragile foot-stalk ; but compared with theirs, indeed, without comparison his lot seems a highly favoured one. His path, a covered way, is through a leaf, often of the rose ; and each step of progression (for labour he has none) would seem an act of self-gratification, as the little Sybarite, lodged between the upper and the lower membranes of the leaf, eats onwards through its soft green pulp, from the point whence he issued from the egg even to that which terminates his caterpillar career. Thus eating and progressing, he produces, by removal of the excavated pulp, a visible track, appearing on the leaf's surface like a broad white tortuous line, with a dark one running through its centre. This has been compared to a valley watered by a winding stream—a “happy valley,” we may well suppose it, to its little solitary inhabitant, because, unlike the Abyssinian Prince, he knows no wish to leave it. And truly, as we have said, the leaf-mining caterpillar would seem to have drawn a prize in the lottery or allotment of insect life, inasmuch, at least, as his covered position serves as a defence from various perils and enemies to which some of his brethren are openly exposed, and from which others (as he of the “tent” and the “roll”) are only protected by laborious exertion of mechanic skill.

On first waking into life, the leaf-miner finds himself, through the exercise of maternal care instinctively and prospectively employed, placed on the surface of his green patrimony,—the leaf exactly suited to his appetite, into the depths of which (a

depth comprised within the thickness of a sheet of paper) he at once plunges,—pursues, for his appointed span, his safe and luxurious way,—then, in a quiet little plain or dell, which forms the termination of his “happy valley,” passes the period of his aurelian slumber, to emerge thence a minute moth, one of the most brilliant and beautiful of nature’s miniature gems, wanting only augmented size to vie with the diamond-beetle and the humming-bird in metallic lustre.

A miner of the alder-leaf is described by Swammerdam as having upper wings, which “shone and glittered most gloriously with crescents of gold, silver and brown, surrounded by borders of delicate black;” and Bonnet, who calls them “tiny miracles of nature,” only regrets that they are not “*en grand*.”

There is hardly a tree or plant of which the leaves do not at one time or another furnish specimens of the Leaf-miner’s winding tunnels. However unacquainted with the outward tokens of their inward presence, scarcely anybody can have failed to perceive those white serpentine lines so especially common on the leaves of the rose-tree, the bramble, the honeysuckle, and the oak. Irregular tracts of the above description, or brownish transparent blotches, are always certain signs that the leaf, of whatsoever sort, whereon they are exhibited, has been subjected to the operations of some insect-miner; but they do not by any means as indubitably indicate that miner to have been a moth caterpillar.

The leaves of Columbine are not unfrequently variegated by

these winding whitish paths, increasing in width from the point of their commencement; but the agent of their excavation, instead of being the caterpillar of a tiny moth, is the grub of a minute fly, which, when enclosed in its little brown barrel-like puparium, may easily be detected, on holding up the leaf against the light.

In speaking of the common house-fly, we have noticed already a species closely resembling it, which, on a scale proportioned to its size, carries on its mining operations between the membranes of dock-leaves, causing thereby those brownish-red transparent blotches by which they are so commonly disfigured. Striking, certainly, is the contrast, in their early stages, between the lives of our caterpillar "Miners" and those of their little brethren the "Stone-masons" and "Tent-makers." These, instead of having only to enter at once upon a path of peace and plenty, are compelled, before they touch a morsel of their respective viands, to labour hard at the erection of houses of defence, exposed meanwhile to the prying eyes and devouring bills of insect and biped enemies. Herein, besides contrast, would seem inequality of condition—and yet perhaps (as with the seeming inequalities of human life) the balance of enjoyment between these labouring and non-labouring insects may be more nicely adjusted than on first sight appears. In compensation for his greater amount of labour, who knows but that certain pleasant sensations of repose, satisfaction, and security, unknown to the mining idler, may not be experienced by the

“Mason” architect on weaving and cementing into the last mesh the last stone of his tediously constructed pyramid; or that he may not, beneath its solid protection, betake himself, with peculiar relish, to his first toil-earned meal of lichen? And so with the “Tent-maker,”—may we not, in like manner, suppose that, after the pains of shaping and cutting and joining a portion of one leaf to construct his light pavilion, he must proceed to regale upon another with a greater degree of zest than the “Miner” whose repasts are attended with no trouble but the eating?

Amongst ourselves it is at all events indisputable that the good things of existence are enjoyed in a measure very much proportioned to the labour employed in their attainment; the exceptions to the rule resulting, usually, from disordered economy, political and moral. If in our own world of reason and humanity, things were but as rationally and humanely ordered as in the insect world of instinct, the balance of exertion and enjoyment would almost invariably be maintained, and the sentence of labour, our inherited portion, become our best estate. That sentence, which our Supreme Ruler has mercifully rendered capable of being transmuted into a blessing, is only perpetuated as a curse through the permitted and abused agency of man on man. Only, in other words, do they owe misery to labour on whom labour, considered as a tax, has been too severely levied, and with whom the labouring powers, mental or corporeal, viewed as a possession, have been defrauded of their due. But alas! as society is at present

framed, how numerous are the objects of such fraud and oppression!—creatures, which like our insect “Stone-masons” and “Tent-makers” have to *begin life* by labour; but, unlike them, are robbed, through excess of it, of the best reward of toil—the quiet repose, the relished meal, the open air and cheering sunshine. The Clothes-moth weaver rests in the midst of plenty; but the factory-girl weaver, her toil for a brief season intermitted, has no health for enjoyment of her scanty fare, or scanty hour of repose. The moth “tent-maker” having woven her tiny tabernacle, roams under its shelter over the verdant leaf-plains which surround her; while the woman shirt-maker (with whom it is “Stitch, stitch!” for ever) has no green spots in all her weary wilderness of life.



Dead amongst caterpillars, of his craft.



A SUMMER DAY'S DREAM.

"Their shape would make them, had they bulk and size,
More hideous foes than fancy can devise;
With helmet heads and dragon scales adorned,
The mighty myriads now securely scorned,
Would mock the majesty of man's high birth,
Despise his bulwarks, and unpeople earth."

It was a sultry day in August—such a day as is sometimes denominated "piping hot," a term of which, by the way, the meaning is not very apparent as applied to weather wherein not a breath of air *pipes* for the benefit of dancing foliage—when the piping of the feathered bands is discontinued for the

season, and when even the little plough-boy wipes his face, and only wets his whistle. Wherein lies the music of such times of muteness—nature's "*pip*ing times of peace?" Etymology can doubtless tell, and *Entomology* may, as we take it, throw some light also on the subject.

Well, nothing could be more generally characteristic of "still life" than the day and hour, about a year ago, which we would now recall, when, book in hand, we crept from our little sun-baked domicile, and throwing ourselves under the shade of a huge elm-pollard, plunged not, we confess it, into our provided volume, but into a reverie about as drowsy and dreamy as the heated face of Dame Nature. And here we must notice, that while all the other children, animal and vegetable, of our nursing-mother Earth, were taking their noontide slumber on her lap, one portion of her family, that, namely, composed of the insect crew, seemed resolved to keep the world stirring, or at least to make a stir in the world, whose sunny places seemed to be entirely abandoned to their use. These little impertinents, the *pipers*, and eke the dancers of the hour, seemed, in truth, to have taken complete possession of three elements—air, earth, and water—together with a large portion of the fourth, diffused through all by the fiery sun; and, in thus possessing, gave apparent life to the elements themselves, making them reel again with insect

" Mirth and revelry,
Topsy dance, and jollity."

We might have repeated appropriately, from the volume in our hand,

“ Oh ! qui n'eut partage l'ivresse universelle,
Que l'air, le jour, l'insecte apportaient sur leur aile ?

“ This glad ebriety who could but share—
The winged mirth of insect-season—air ?”

The intoxication of the day was with us, however, entirely of the somnolent character, and we had already closed our eyes on the bulkiest moving object within our range of sight—namely, the lashing tail of a solitary cow, ruminant in an adjacent pond—when we were startled by a light footstep on the back of our hand. It was not exactly a fairy who had come to visit us ; but it was a little creature, both in form and attire, of most fairy-like seeming. It was none other, in short, than a lace-winged fly,* the most graceful insect of its elegant and graceful tribe. “ Truly,” said we, as we looked upon her gauzy wings of delicate green, mingled in their iridescence with rainbow hues—“ truly it is a pity, my little lady, that there's so precious little of you ; that all this tissued bravery, and even those eyes of gold, should, only for lack of size, be overlooked by nearly all other eyes, save those only of some lace-winged lover, who for beauty, perhaps, may have no eye at all !” Our winged fair-one had, at all events, no ear for admiration expressed in (to her) an unknown tongue ; for before our complimentary address was ended she had disappeared.

* Vignette to “ Fair and Fierce.”

Only suppose, thought we, pursuing the train of fancy brought and left behind by the gauze-winged sylph; suppose, that by the touch of some Circe's wand, all the insect forms creeping and flying and floating around us—now less *seen* than *heard* and *felt*—were all at once enlarged to the proportions they assume to the eye in that amusing raree-show, the solar microscope—verily we should feel somewhat ill at ease in the strange company wherein we should figure then—as insects most insignificant—as performers playing certainly no first fiddle.

“Gorgon and hydra and chimera dire,”

would not then exist only in the realms of imagination; but fill to suffocation the atmospheric and the aqueous fluids, and walk in appalling reality on the solid earth. And amidst the crowd of shapes terrific, small, we take it, would be our inclination to single out for admiration such among them as our lace-winged elegants; or, with the poet, to admire in

“The beetle panoplied in gems of gold,”

the semblance of

“A mailed angel on a battle day.”

At this moment a host—not of angels but of blood-thirsty demons in the shape of gnats—rose from the adjacent pond, and passed across our face. Using our book as a weapon of destruction, we felled a multitude to the earth; and, in completion of our angry purpose, trampled many of our fallen

victims into the dusty ground. Scarcely had we done the deed, when something like a qualm of conscience, arising partly from our penchant for gnats before recorded, partly from the magnifying turn our thoughts had taken, shot through our heart. It passed, however, as rapidly away as the remnant of the insect host, whose enjoyment we had so murderously interrupted; and in a few minutes the drowsy incubus which had so long hovered over our head, fairly wrapped us in its leaden wings—in short, we fell asleep. Still our waking fancies followed us. It seemed as though one of the gnats we had just exterminated rose from the ground, and, poised in air on a level with our face, set up a shrill hum, which presently assumed the distinctness of angry high-toned speech. “By what right,” cried the little apparition, “didst thou cut short the thread of my joyous life?”

“Because,” answered we, “as one of creation’s lords, we have the privilege of destroying every thing that invades our peace.”

“And by what right art thou a lord of creation?”

“By the right of reason.”

“Reason!” exclaimed the insect ghost; “say rather by right of *size*. Only let my stature equal thine, and see which would then possess the mastery!”

As the winged phantom thus addressed us, her tiny form expanded; her long hairy shanks stretching downwards reached the ground, and upwards waved like spectral arms above our

head; her enormous eyes, motionless and prominent, seemed bursting with malignant spleen; her antlers quivered with rage, and, pointing towards us her blood-extracting weapon, straight 'and long as the stiletto of Italian bandit, she seemed about to plunge it in our heart! We started to our feet in terror; and at that instant a sudden gloom, as of coming twilight, overspread the sky, while a flapping as of the canvass of ten thousand vessels proceeded from a winged multitude, monstrous now in bulk as in number, which filled the air. Attempting to escape, we nearly stumbled over—not a stone—but an enormous beetle (bigger than the biggest turtle ever captured on the shores of the Antilles), and only regained our footing to tread upon the loathsome yielding body of a caterpillar swollen to a serpent's size, and rolling its mutilated length about our ankles. All around, the darkened day-light presented only similar objects, half-revealed: ground, grass, flower, shrub, and tree, all laden or crushed by living masses through which we had, if possible, to force our way in order to gain the shelter of our roof. Armed by desperation, we continued to advance;—and what an advance it was! Pierced by poisoned arrows, swords, and spears, in the shape of what, as stings, we once despised—lacerated by forcep-jaws armed with shark-like teeth—bruised by violent contact with the mail-clad limbs of grasshopper Goliahs and beetle Bevis's—deafened and bewildered by sounds most strange and threatening, and of volume augmented in proportion to their ut-

VOL. II.—16.

terer's bulk—we ran the gauntlet through this infernal crew, and at length, when almost exhausted, reached our door. But entrance was even then not easy, for our portal was barricaded by thick silken ropes stretched across it in all directions. Unable to break, we contrived to sever them with our pocket-knife; but (horror of horrors!) no sooner were the cords divided, than rapidly descending by one of them which hung loose above our head, a spider, big as a baboon, alighted on our shoulders, and made her long hairy legs meet around our neck. By a desperate effort we threw off our disgusting burthen, and, opening the house-door, shut it with all possible celerity; but one of the spider's arms, stretched out to renew her grasp, crackled like a lobster's claw as we jammed it betwixt door and door-frame. As we entered our parlour a deafening buzz was our first salutation, and the daylight, obscured as it was without, could here scarcely penetrate at all by reason of a swarm of gigantic flies, which, unable to find room in the window, were crowding in double and triple ranks around it. Hastily retreating, we descended to the kitchen; but here—how shall we proceed? We had escaped with life from the hideous assemblage through which we had achieved a passage. We had managed to avoid the fangs of the murderous bloated creature which had fastened upon our door, and then fastened upon us. We had shut her out, and we had shut in the swollen sickening blue-bottles; but what we had left behind was nothing to what awaited us—an ap-

palling horror which we shudder to describe. On entering the kitchen we saw not a living thing, not even Martha—old Martha—our faithful factotem, upon whom we called, albeit in a trembling voice, fearful to attract the notice of some hidden lurker amongst our new and hideous enemies; but no Martha replied, as expected, from the scullery; and with a dread of we scarce knew what, well nigh exhausted also by terror and exertion, we sat us down in her arm chair. The sky was still partially obscured by monstrous creatures on the wing, and evening was now approaching, so that there was little light in the apartment but what proceeded from the fire, which had burnt very low. We had not been seated long before we were startled by a slight noise proceeding from one of the deep and dark recesses on either side the chimney; and, on looking into it, we could just discern, indistinctly, some moving object. What this might be we dreaded to ascertain; but with a shaking hand we lit a candle by the dying embers, and held it up within the recess. Then, oh! the spectacle that we beheld! Supported by her enormous web—a tissue of mingled cable—sat an elephantine spider, to which our assailant at the house-door was a mere pigmy,—a spider of most hideous aspect, her eight glassy eyes sparkling with greedy ecstasy as she gorged upon a fresh-caught, fresh-killed victim, and that victim no heedless, idle fly, but, alas! that busy bee, Martha—our faithful Martha! For a moment we stood horror-stricken; then, armed by rage and grief and the

kitchen poker, we rushed upon the loathsome murderess, who, intent upon her prey, heeded not our approach, and, with a single blow, brought her bloated body lifeless to the ground, that of her victim falling with it.

What a night of terror did we pass, holding our vigil by the dead ; but we held it not alone, for beside poor Martha's hearth, mocking or mourning its desolation, sat a monstrous cricket, piercing our ear and heart with his shrilly chirp ; while at intervals—loud as the ticking of a church-clock—rose the warning click of an enormous death-watch.

Two dreadful days passed over, at the end of which the prospect out of doors was completely changed. Every tree and herb were stripped of their foliage—every blade of grass mown down. The air was no longer laden with gigantic flutters, nor, as before, did the ground seem alive with crawling monsters. Nearly all the devouring creatures whose aliment consisted of herbivorous products, having almost exhausted their store of provision, had either perished for want of food, or fallen a prey to carnivorous enemies of their kind. The ant-lion had left his pit-fall—the spider her snare, artifice being no longer needed to entrap her exhausted victims—the wasp rifled without combat the shrunken honey-bag of the starveling bee—the dragon-fly glutted his voracious maw on expiring butterflies—and, like a hideous Ghoul battenning at midnight on the dead, the cockroach crawled forth with the shades of evening, and polluted the air with his offensive

odour, while he made his disgusting meal unseen and unmolested. Amidst this abhorrent crew—some of whose gigantic forms occasionally crossed our window—we could not perceive a single human being, or one domestic quadruped or bird. The latter had no doubt been nearly exterminated by parasitic and blood-sucking infesters turned from mites to monsters, with appetites augmented in proportion to their bulk. As for our fellow-men, we could only conclude, that what with the ravages of swollen vermin of the like description, the wounds of monstrous biters and stingers, lack of food, and terror, numbers had been brought to a fearful end; while others, hidden within the temporary and partial shelter of their houses, were probably awaiting a fate such as must soon inevitably befall ourself.

“The sooner the better!” we mentally groaned, as we turned with loathing from the window to a sight yet more sickening within—that, to wit, of the body of the hapless Martha, as it lay beside that of her bloated murderess;—“but first,” we continued, “let us inter these poor remains; and that will we do in the very teeth of these demoniac monsters which have taken possession of the earth.” We took a spade from a corner of the kitchen, and were just about to issue forth in pursuance of our purpose, when we felt the floor tremble beneath our feet—the walls shook—and in another second we found ourselves in the midst of ruins, and in nearly total darkness. Stunned and stupefied, we knew not at first

what had happened—much less how the catastrophe had been brought about; and our first feeling of consciousness did not partake so much of terror as of a sort of satisfaction at the idea of our miserable existence having been by some means or other brought nearer to its close. We soon became aware that we had fallen from the kitchen to the cellar beneath, which Martha (poor careful soul!) had not failed to lock on the outside. A partial light was admitted through apertures in the broken floor above, and to reach one of these openings, for the purpose of effecting our escape, was an attempt which, under other circumstances, would have been immediately essayed; but whither could we go to escape from the hideous creatures which had taken possession of the earth? and, as smarting with the wounds they had inflicted, and aching with bruises, we lay crouched upon the cellar floor, which we verily believed would be our last bed, we felt a ray of comfort in the thought, that here at least we were secure from their attacks. While indulging in this imagined safety, we were startled by the sound of something astir amongst the surrounding rubbish, and presently from a large mass of it, in heaving motion, there protruded the enormous head and prodigious jaws (black and shining as polished jet) of a mining ant of Brobdignagian proportions. It and its fellows had evidently been the cause of the late catastrophe; their subterranean operations having undermined the walls of our residence, and thus reduced it to its present state of ruin. Though the moment before indif-

ferent to life, we now felt an involuntary desire to escape from this dark agent of destruction and its unseen comrades, whose labours might in another instant crush us to atoms. The spade we had purposed using for poor Martha's interment had accompanied our fall, and assisted by this implement we amassed a heap of rubbish whereon we climbed to the opening above. We thus regained a footing on the broken floor of what had been but three days previous our well-ordered, well-swept domicile. Oh! that giant spider! she had well avenged her pigmy sisterhood,—victims of the broom! *Her* victim was buried in the ruins, where, with a sigh, we were compelled to leave her, making our way in fear and sadness across our so lately trim little garden, now a spot of barrenness, not to be distinguished from the wider wilderness around. It was a summer's evening; but the glowing west, against which the defoliated trees were exhibited in all their bareness, wore much more the appearance of a frosty winter sunset. In the midst of these skeleton trees we could discern the outline of a cottage—the habitation of a neighbour some half-mile distant from what had been our own abode; and though it seemed but too probable that its occupiers might have perished, or be now perishing under the monstrous visitation which had befallen, we felt impelled towards it, in hopes, at least, of the brief companionship of some survivor like ourselves. Looking fearfully around, and perceiving no living thing, we crawled onwards as well as our failing strength per-

mitted, over impending obstacles which would have been formidable to the strongest frame. In place of verdant herbage and fragrant flowers, the ground was thickly bestrewn and the air infected by relics of destroyed life, both vegetable and animal. Dry stubble, skeleton leaves, stripped branches, and over these, thick as the slain upon a field of battle, the remains of herbivorous insect giants, which had fallen a prey to their carnivorous fellows. These consisted of prodigious pinions and enormous empty carcasses of butterfly, moth, and bee, and fly—vacant armour-pieces of many a mail-clad beetle of the gentler tribes, such as in magnitude would have matched the helmet of Otranto,—and, here and there, scattered amongst them (of all these relics most insignificant in point of size) the closely-picked skeletons of sheep, horse, or ox, with others which we shuddered to behold. The further we advanced the more our heart sickened, for though the ruddy sunset was fast giving place to the gloom of evening, no cheering light was discernible through the leafless trees in the windows of the cottage we were approaching, or those of any other adjacent habitations. Our remaining strength and resolution were on the point of utterly failing, when there suddenly appeared against the sky, on the brow of the eminence we were ascending, two moving figures of (as it seemed to us) human size and proportions. Were they indeed human? or only some frightful variety of that once despicable crew, displaced, simply by augmented size, from their former place in creation's

scale, to become, as it seemed, creation's destroyers? The pair, of what kind soever they might prove, continued on the summit of the hill, while we, in breathless anxiety, stood scanning intently, though from the deepening gloom not with any satisfying degree of clearness, their shape and movements. Presently, we perceived one of them assume a kneeling posture. "Thank heaven!" we exclaimed, "then they are indeed human! Brethren are still left us in this world of monstrous desolation; and they are praying, like ourself, for deliverance from its horrors." The idea of companionship invested us with renewed strength, and we again pressed forward over every obstacle. Having descended from the brow of the hill, the figures we were hastening to meet, and who were now apparently on their way to meet *us*, had become nearly indiscernible, and were presently quite hidden by the trunks of some bulky intervening trees. By the time we had passed this temporary screen, the twilight had deepened into nearly total darkness; but we were now so close upon the companions whom our desolate heart bounded to meet, that we could hear their advancing tread, as they crushed the scattered *debris* lying on the ground. There was something, in the sound of these approaching footfalls, which inspired us with mingled doubt and dread. We called to mind, however, the figure we had seen on the hill in an attitude of prayer, and thus endeavouring to subdue our misgivings, called aloud on the advancing individuals. No voice responded; but the steps

continued to approach till they seemed but a few paces distant, though the walkers were still concealed in darkness. We strove to speak again, but our tongue refused its office.

At this moment the scene was suddenly illumined by a blaze of light proceeding from the enormous lanthorn of a giant glow-worm (one of the last survivors of its harmless race) suddenly protruded from a heap of half-devoured leaves on a bank by the way-side. Then we beheld (oh! sight of terror and sickening disappointment!) instead of the fellow-men we had fondly hoped to encounter, two hideous shapes, human in naught but bulk—*so* hideous that our blood ran cold at their very aspect. On a level with our head (on either side one) were a pair of long triangular bony faces, motionless as visages of the dead, save for the fierce twinkle of their prominent green eyes, each studded by a blood-red pupil. Fitting pedestals for capitals so frightful were the figures of these monstrous creatures—their bodies gaunt and lanky, their limbs angular and rigid, resembling rather the skeleton branches of a blasted tree than any animal form of life and motion. Yet of motion, fierce and threatening, there was no lack in the long spectral arms waved above their heads and brandishing in all directions as many tremendous weapons, knife-like and saw-like, which, being part and parcel of themselves, could never be wrested from their grasp. The horrid pair seemed about to rush upon us, when they both turned suddenly towards the bank—stopped—bent under them their

hinder limbs, and raising and clasping together their hideous arms, again assumed the attitude of prayer—that attitude by which we had been so cruelly deceived.

We knew them now (the wretches!) for the Mantes—the Praying Mantes*—of all carnivorous insects the most strange and frightful—even when of insect size, objects of dread and superstition—as insect monsters, oh! most horrible! That attitude of seeming devotion was only one of riveted attention to a new object of attack in the unfortunate glow-worm, whose soft bulky body, revealed in her own self-betraying light, seemed to tempt more strongly than our own shrunken carcass, the devouring appetite of these cruel gormandizers. One of them began to climb the bank whereon the helpless lamp-bearer reposed, but was speedily pulled backwards by his jealous comrade. Then began a determined combat, each monster throwing up his head, and brandishing his murderous weapons, preparatory to mutual attack. Using, sabre-like, their tremendous arms alternately to guard and cut, both combatants maintained for awhile a nearly equal contest. Then, as if resolved to end it, both threw open their rustling leaf-like wings, and darted like lightning on each other. A deadly struggle followed, till at last the weakest fell a headless trunk—but not lifeless body, for it was speedily again erect; the arms again waved, and shook, and grasped, in the desperate

* The *Mantes oratoria*, the *Prie Dieu*, the *Pater noster*, the *Louva Dios* of Southern Europe.

convulsions of expiring agony, while the hideous head, with jaws gnashing and eyes turning from vivid green and red to *fewille morte* brown, and black—seemed to watch, in impotent fury, the hopeless efforts of its detached body. At the commencement of this hideous combat we attempted to escape by creeping gently towards the confines of that sphere of light proceeding from the lamp of the glow-worm; but when we reached its verge, we feared to plunge into the thick darkness beyond, lest other monstrous creatures, horrible as those left behind, should be lurking in its cover. Rather than encounter we knew not what, we climbed, during the sanguinary contest, to the top of a lofty tree, whose matted branches, leafless as they were, might serve, as we hoped, for concealment and protection.

The struggle between the headed and headless monsters was soon ended, and the victor, while the limbs of his late antagonist yet quivered, began to glut his cannibal appetite on the body. How can we describe the horror and disgust with which we watched, from our lofty station, the progress of this demoniac repast? and yet we awaited its conclusion with something like a feeling of hope. “The creature,” thought we, “will completely gorge himself, and when, like a boa constrictor, he has become torpid and helpless through repletion, we may be able to destroy him, or at least, when morning comes, effect our escape; though, alas! we scarce know whither.” Too soon, however, we found ourselves deceived; for deserting, when about half devoured, the body of its late

comrade, the monster again erected itself into that appalling attitude of prayer—thus watched for a few moments the slow unconscious movements of the glow-worm on the bank; then sprang upwards and seized in its terrible saw-like arms the yielding body of the luminous beetle. Its phosphorescent light flickered—disappeared—again shone with dimmed and scattered radiance,—then was utterly extinguished, as the enormous living lamp was tossed and turned, and finally crushed in the grasp of its destroyer.

Then it seemed to us as if the last light of the devastated earth had expired with the life of its harmless bearer, and that we, in a world of darkness and destruction, were left alone with one devouring hideous monster. We could hear nothing but the “champ,—champ” of its ravening jaws, and the clashing movements of its rigid limbs, as it now and then turned its prey for the more convenient discussion of its loathsome meal.

The dews of that summer night were lighter than the drops which fell from our reeking forehead, and our trembling arms could scarcely retain their grasp of the leafless branches which secured our seat upon the elm.

The monster’s meal was followed by a dead silence—but it was not of long duration; and then we found him to be again in motion by the renewed sound of his long horny limbs which approached nearer and nearer, as he seemed to draw them after him, in cat-like crawling progress, towards the bottom of our tree. The darkness still hid him from our

view; but to him our proximity was evidently obvious, either by vision of more nocturnal power than our own, or through that sense by which the blood-hound tracks his victim. We heard him slowly ascend the rugged trunk, then climb, rustling, through the branches under us!—We heard no more—our heart sickened—our head swam—our powerless arms quitted their hold—and we fell——into the insect monster's jaw? Not a bit of it, dear reader. We only fell (having suddenly awoke) from the appalling position to which our sleeping fancy had raised us, to the flowery bank which had been our bed beneath the old elm-pollard.

“What a precious extravaganza!” we mentally exclaimed, as sitting up we recovered a joyful consciousness of the realities around—the pleasant realities of a summer's evening—for the sun had declined, and a refreshing breeze was waving the silken, silvery heads of the reeds below us.

We are no interpreters of visions—our own or other people's; but being, in our way, a sort of utilitarian, we have always fancied that dreams (not merely those which would seem sent expressly for reproof or warning, but dreams in general) may be made available to good by the process of recalling and turning their purport over in our minds, even as we should muse habitually over our waking thoughts; a mental exercise than which, according to philosophers, there is none more useful.

With a view to some such purpose of improvement, we

thought over, as we walked homewards, the late vagary of our napping fancy, and were not long in deducing from it some admiring reflections on the nice proportion as to *numbers*, *size*, and *power*, preserved through every order of creation; a proportion to destroy which, in any one department, would be to bring destruction upon all.

This conclusion and our own threshold we reached at the same moment, and then occurred to us a subordinate and domestic purpose, to which our recent dream was also applicable. "I'll tell it, or a part of it, to Martha, and perhaps through very fear she will grow more lenient towards the spiders, and I shall hear less of her incessant broom!"



"That victim no idle fly."



FAIR AND FIERCE.

“ We are——

Like warlike as the wolf for what we eat ;

Our valour is to chase what flies.”

THERE are now to be seen almost everywhere, hawking about lanes and hedges in search of prey—fair as the sunshine, and fierce as its meridian rays—three insect families of the Linnæan order *Neuroptera*, which are well worth observing for their beauty, and studying for the peculiarities of their economy. These comprise *dragon-flies*, *scorpion-flies*, and *lace-wing flies* ; the former, from their imposing size, well known by sight to everybody ; while the two latter, though both, especially the

lace-wing, of surpassing elegance and beauty, are as commonly overlooked, on account of their comparatively inconspicuous size.

To begin, then, in deference to their superior magnitude (which in some species constitute them the largest of British insects) with the dragon-flies, popularly called by the French, "*Demoiselles*," partly, perhaps, in compliment to their beauty, partly as a satire on Amazonian propensities. By the ignorant among ourselves they are known as "horse-stingers," a complete misnomer, seeing that the blood wherewith they delight to moisten their carnivorous jaws is never, by any accident, taken from those warm red streams which flow through the veins of beast or man, but consists of that colder, whiter fluid, which pervades the tender frames of butterfly and case-fly—the innocent creatures they are ever seeking to devour.

Since our readers may not, just at pleasure, be able to capture a living specimen of the large *green dragon-fly*,* now so abundant, let them look, *en attendant*, at one of a smaller species† depicted by our pencil. Though a minim of his kind, is he not a glorious yet formidable-looking creature? Mark his four large ever-expanded wings of glassy membrane, with their beautiful lace-like nervures, not distributed for mere adornment, but in every meander serving as channels for the circulating air, which, thus spread over the surface of the pinion, confers on this insect a marked pre-eminence in power and permanence of flight. Observe his straight, slender body

* *Æshna varia*.

† *Agrion*.

—so long and light—contrasting with his muscular chest and bulky shoulders, fit receptacles for the insertion of those powerful pinions; and the legs, six in number, strong and rigid, and armed with claws. But notice, above all, the head—the round enormous head—nearly the whole of its upper half occupied by large prominent eyes, which, in their crystal-line transparency, differ remarkably from the generality of visual organs among insects, with their lifeless appearance of dull opacity. In these there is no lack of vivid expression, as the numerous hexagons of which they are composed seem to be for ever in motion, now appearing visible, then seeming lost beneath their translucent common covering or cornea. With the threatening animation of these rapacious-looking eyes, the mouth and powerful jaws are in formidable accordance; and if, in the sight of its insect victims, this veritable dragon of their tribes wears anything like the aspect he bears in ours, (his terrors magnified by superior size, and perhaps, also, by instinctive dread,) with what trepidation must defenceless case-flies flee before him, and what a panic must be created by his very shadow amongst a bevy of white-robed butterflies, when assembled, according to their wont, in a water-drinking party round a pond. Well may ye tremble, ye harmless sippers, at the approach of this, your arch-destroyer, as ye catch the sound of his rapid flight—audible, perhaps, to your delicate antennæ, though silent to our coarser ears. Well may ye rise in terror and confusion, when ye behold his terrible

image reflected, with your own fair forms, upon the surface of the liquid mirror at your feet ! But little will your feathered wings avail you when matched in flight against his bare and nervous pinions. Whether you await or endeavour to escape him—whether at rest or in the air—he will pounce upon you, tear off, without mercy, your painted pinions ; and, when reduced to a disfigured mutilated trunk, bear you off in triumph to the first convenient resting-place—some bough or paling—there to glut his maw upon your honeyed juices, while repose gives him new vigour for the pursuit and massacre of others of your race !

Such is the dragon-fly in his form of maturity ; and, even in his earliest stage—that of a crawling, wingless grub, groping in the mire, or swimming through the water of the pond over which he subsequently soars, he exhibits the same savage propensities, only modified by form and situation. He is, in short, “a murderer from the beginning,” distinguished for remarkable rapacity, with endowments yet more remarkable for its gratification. These we have already noticed under the head of “water devils,” amongst which, while a grub or larva, the dragon-fly figures as a very Beelzebub. In the present month (August), and on to October, the large green dragon-fly* is commonly seen on the wing, in sunshine, near streams and hedges, or found resting, of an evening, on water-plants or low bushes.

* Figured with its puparium in the Vignette to “COMING OUT.”

Few insects lose their beauty more rapidly with the extinction of life than this and others of its tribe. The beautiful markings on the body soon lose their distinctive colours—variegated green, and black and yellow—and the eye, so brilliant and translucent in life, growing dark in death, changes finally to a lump of blackness. In order to preserve the colours of the body, in this and other species, collectors are in the habit of emptying the trunk through a longitudinal suture beneath, stuffing it with cotton, after having cleared it; but we are not aware of any process by which the large lustrous eyes can be preserved with any semblance of life.

We have spoken of the dragon-fly's four powerful pinions as always open, in readiness for flight. This is generally the case with the families of *Æshna* and *Libellula*; but in some, the wings, when at rest, are applied to the body, as in the instances of a very common but very pretty little species,* with bodies variously coloured (as blue and black—red and black—green and black) which are, in most places, numerous over ditches in May and June; in which months another species (the large black and yellow), is also not uncommon. About two hundred different kinds are said to haunt the woods and streams of Britain.

From the dragon-fly, the above redoubtable giant among English insects—we come, by no very abrupt transition, except in the great difference of their bulk, to the scorpion-fly,† a

* Of this is the insect figured in Vignette. † *Panorpa*, also in Vignette.

lesser but no less striking specimen of the "fair and fierce." It would even seem that with reference to the quality of fierceness, or more properly of valour, this latter insect is well worthy of precedence over its bulkier class-fellow, of which, being invariably the foe, it is not unfrequently the conqueror. Only look at these enemies by nature, the great dragon and the little scorpion flies, in juxtaposition, and, on comparison of their respective sizes and apparent powers, you will hardly admit the possibility that when opposed in single combat the latter should come off victor. Yet thus it stands recorded in the chronicles of insect doings, wherein, on good authority, it is written, that the tyrant of our lakes and pools (cowardly as tyrants are wont to be) is terrified even at sight of a scorpion-fly assailant. One of these valorous pygmies is related by Lyonnet to have attacked, in his presence, a dragon-fly ten times its own size—to have brought it to the ground, pierced it with its sharp proboscis, and have left it with life only through the interference of the naturalist spectator.

This insect "hero of a thousand fights," bears in his tail a formidable-looking, sting-like weapon, which might seem mainly instrumental to victory in such unequal combats; but dangerous as this may appear, his nasal dagger, or stiletto, does him, we believe, the most good service both in attack and demolition of his bulky foes. He doubtless, however, finds a use for the appendage at his tail, and albeit we have found it harmless within our capturing grasp, its bearer owes the name

of "*Scorpion-fly*" to its great resemblance outwardly to the deadly sting of the scorpion of tropic climates.

From May to November these pretty flies are everywhere common upon hedges and in gardens, where, with predacious activity they make cruel sport under the summer sun, cooling down, with advance of autumn, into a milder state of comparative inactivity, which renders them an easy prey alike to bird and entomologist.

Last, in our trio of "the fair and fierce," but for either attribute not least, comes the beautiful green and golden-eyed lace-winged day-fly*—like the daisy (day's eye) loving sunny weather, and the most elegant perhaps of all insects upon which the sun (in Britain) ever shines—wanting only augmented bulk to render it an object of universal admiration.

The form of the "lace-wing" is always graceful—whether at rest, with her ample folded wings, arching and sweeping, train-like, over her slender limbs and body—or whether by expansion of these her gauzy pinions, she displays to more advantage their most delicate workmanship—a net of nervures, interlaced over a thin transparent tissue, beautifully iridescent with varying hues of azure-blue and rose colour. But above all may this insect beauty, if she ever takes flattering counsel at a dew-drop mirror, pride herself on the peculiar lustre of her eyes—a metallic brilliance closely resembling that of burnished gold. There lurks, however, under these glittering orbs, as much deception (though of a much more harmless

* *Heimerobius* (Vignette.)

character) as belongs frequently to others—hazel, black, and blue. Their burnish is but gilding, being (like that on the skins of various chrysalides) produced only by an opaque varnish under the cornea.*

To look at this fairy-like creature with nothing fierce in her exterior, save perhaps the golden fire of her eye, one might naturally suppose that from fruits, or flowers, or foliage, she must derive her slender nutriment—that she must have borrowed from the sappy leaf her prevailing hue of emerald green—from the petals of the rose and hyacinth the evanescent gleams of crimson which mingle with the azure of her filmy wings—and from the golden anthers of these, or other blossoms, the golden seeming of her lustrous eyes; but “fair and fierce” were then appellatives, which in their compound would ill beseeem the pretty “lace-wing;” whereas, in point of fact, they both equally befit her.

With all her beauty, and all her seeming gentleness, she bears about her no odour of sweetness—on the contrary, an ill-conditioned scent; and could we but inquire of her character amongst insect nations, especially amongst the tribes of Aphides,† which people the waving foliage, we should find her name, amongst them, in worse odour even than her person. The very story that flocks might bleat about the wolf, or turkeys gabble of the fox, these aphides would certainly relate to us of the lace-winged fly. “She invades,” would they de-

* See Painting, Carving, and Gilding.

† See article on Aphides.

clare "our verdant pastures, drains our blood, sometimes even dresses herself in the skins of our slaughtered brethren, and for this, as well for the harmless mien which cloaks her ruthless nature, may be looked on, not merely as a wolf, but as a wolf in sheep's clothing." Thus would say the little aphides; and the same character, with features somewhat enlarged, but by no means softened, we are compelled in justice to assign to their arch enemy, who even before she has lacy wings to boast of, or golden eyes to look upon the day, begins her murderous ravages among their leaf-sucking tribes.

But let us commence the history of the lace-wing at its beginning—even from the egg—which in itself presents (by the way) a tiny object too singular as well as pretty to be overlooked. There are to be seen, from May to August, attached to various leaves, but those chiefly of the rose-tree, certain slender filaments, green or white, surmounted by an oval head, and arranged—sometimes, fringe-like, round the edge—sometimes in groups on the surface of the leaf—standing sometimes singly and distinct—sometimes with heads united in a cluster.* These heads, with their delicate stalk-like appendages, are none other than the eggs of the lace-wing fly; but it hardly needs to be observed, that from no such minute envelopes could possibly emerge her winged descendants, which, like all nearly of the insect race, have to reach their perfect form through three successive stages of development.

* See Vignette.

Looking now upon the lace-wing in its earliest shape of animation, that of larva—a flat, wingless, six-legged crawler, wanting only size to make it frightful as well as hideous—we exclaim, “Can it be possible that an object so unsightly can contain within it the germs of grace and beauty?” Even so; and here, when without disguise—“*fierce*,” but not yet “*fair*”—we behold the wolf of aphides playing havoc amongst these flocks of foliage, which, with more than lamb-like passiveness, permit themselves to be individually picked out and slaughtered by their terrible but apparently undreaded enemy,—to her their green pellucid bodies, filled with saccharine juice, are so many honey-pots, which she knows well the trick of emptying (at the rate of three in half a minute) by means of her imperforate as well as pointed jaws. When thus reduced to skins, the spoils of victim aphides are frequently observed so heaped up around their destroyer, as to seem purposely collected to serve it for a cover—a proceeding which Kirby has illustrated by comparing it to that of Hercules in clothing himself with the skin of the Nemean lion. That the skins of aphides are really employed by the grub of the lace-wing as a covering, is indeed a fact sufficiently established by an experiment of Reaumur, who, on putting one of these creatures under a glass case with a silken cocoon and raspings of paper, found it convert both materials successively into similar cloaks of concealment.

When our wolf of aphids assumes the second form of

her existence, and becomes from an active grub or larva (correspondent to the caterpillar of *Lepidoptera*) an inanimate pupa (the likeness of a chrysalis), she furnishes of course but slender matter for the historian of insects. Yet, even in this, her stage of passive transition, our "Lace-wing" in progress affords us something worth observing. After being wearied of aphis slaughter, whereon she has attained her full growth, her last active operation is to enwrap her body in a silken shroud or cocoon, spun previously, not after caterpillar usage by an apparatus at the mouth, but by one provided for the purpose at the tail.

Within this woven wrapper is effected the usual secondary change, and our grub or larva becomes a pupa. In this form, or rather in her emergence thence a perfect fly, our lace-wing offers another remarkable peculiarity; or, perhaps we should say more correctly, exemplifies, in a remarkable manner, a circumstance more or less note-worthy with various insect tribes. This is the extraordinary *disproportion in size* observable between the winged creature, or Imago, and the pupa from whence it is developed. In the curious folding of their members within the chrysalidan cover, and the no less curious expansion of their wings after emergence, the generality of moths and butterflies furnish a beautiful example of this compressive and comprehensive work of nature; but the same operation assumes almost the air of what we call a miracle in our elegant lace-wing fly, which, in one of its species,* exhibits a

* *Chrysopa perla*.

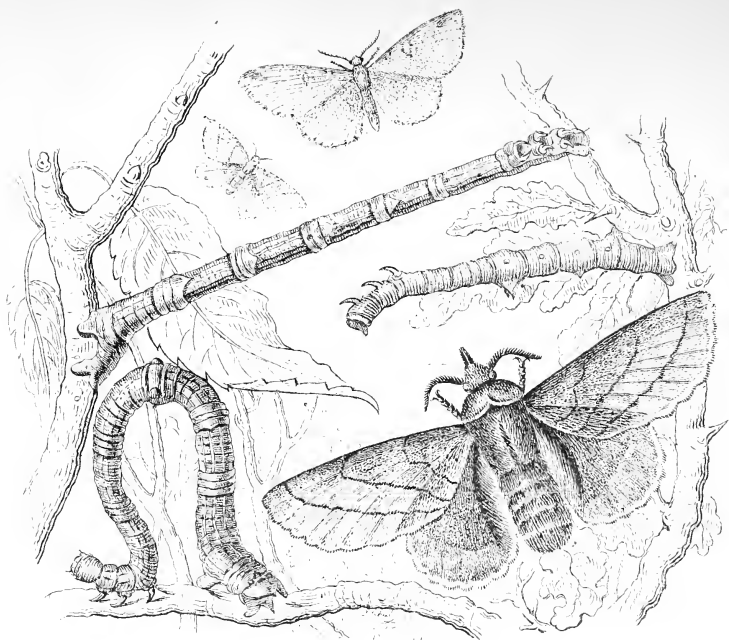
body nearly half an inch in length, with wings which, when expanded, cover the surface of an inch square; and yet has made its exit from a round puparium, or mummy case, smaller than a pea!

Before dismissing our trio of the "Fair and Fierce"—the dragon, the scorpion, and the lace-wing flies—we must bespeak indulgence for their fierceness—not in favour of their beauty, but on account of the usefulness of their devouring propensities.

The fair and gentle objects of earth and air must always be the most pleasing to contemplate; but let us be satisfied, as the world at present stands, with the moral certainty that, as all other permitted combinations of good and evil are made to work together for general benefit, so it is with our insect trio of the "Fair and Fierce."



"Tremble on the approach of your arch destroyer."



RESEMBLANCE AND RELATION.

“Oft on the dappled turf at ease
I sit, and play with similes,—
Loose types of things through all degrees.”

THE last time we were in the public insect-room of the British Museum, our notice was attracted by a buzz of admiration raised by a cluster of a Monday's swarm gathered round one particular case of the entomologic collection. “Well, I never!” “Queer creatures!” “Neither grass nor grasshoppers!” “How curious!” “Perfectly exquisite!” “What strange similitudes!” “Links between the animal and the vegetable,” and so on, ascending.

The above notes of admiration, varied according to the mental compass of each observer, were drawn forth by different specimens of those curious tropical insects, known popularly as "Walking Leaves,"—an appropriate appellation, presenting as they do, a perfect resemblance in form, colour, texture, and veining to vegetable foliage in every stage of progression, from verdant expansion to shrivelled decay. These strange copies, not of leaves only but also of branches, are found in several insect tribes and families, but chiefly those of *Locusta*, *Mantis*, and *Phasma*. The locusts alone afford imitations, so close as almost to deceive a botanical eye, of the leaves of the olive, myrtle, citron, laurel, camella, thyme, grass, &c.; after which plants the species are even named. Not only do the wing-cases resemble a leaf, but in many instances the first joint of every limb simulates a small leaflet, the leg itself forming the mid-rib, and in its prolongation beyond the tip resembling a jointed stalk; while the animal's head, even to the palpi, or feelers, is so formed as to harmonise with the rest.

Some of the tribe of *Mantis*—treacherous and cruel creatures, with long, desiccate, skeleton limbs—are like spectral anatomies of vegetable death—yet living and locomotive. But we need not visit India or China—or even the British Museum or other collections of foreign insects—to find similar resemblances, and sometimes such perfect ones between the insect and the plant that both would seem to have been cast in a common mould—then endowed, the one with an animal,

the other with what Dr. Darwin would have called "a vegetable soul." To discover an English specimen of such curious similitude, we have only, in this present month of August, to shake some boughs of a hawthorn hedge over an inverted parasol or umbrella, into which will almost of a surety then fall some two or three living and moving sticks, or caterpillars of stick-like form,* quite as "queer" and closely imitative as some of the foreigners above noted. These strange little animals have a brown skin, wrinkled and furrowed just like the bark of the branches they are accustomed to occupy, with a forked protuberance on the back resembling diverging twigs or nascent thorns; while, to render his mimicry the more complete, this caterpillar sprig of the hawthorn, in common with others of branch-like semblance, is in the habit, when at rest, of stretching himself out stiff and straight, at right angles with the twig whereon he reposes; and thus remaining for hours motionless, supported only by the grasp of his hind legs and a single thread proceeding from his mouth. This is the caterpillar of a very common yellow moth, with reddish markings, called the Brimstone,† and belongs to a family known to collectors as *Geometers*, *Measurers*, *Loopers*, and *Surveyors*. They are so called from their mode of walking, which is quite as remarkable as their attitudes when at rest. Their bodies, on commencement of their march, being looped up in the form of a Greek Ω , they hold by the hind legs, and stretch them-

* Vignette.

† *Bumia cratagata*.

selves out to their fullest length ; then, steadied by the grasp of the fore-feet, bring forward the hind ones to meet them ; thus with every step looping up the body as before.

In the month of May, or beginning of June, we may often, by careful looking for, find a branch of elder supporting its very image in a caterpillar,* which is perhaps the most remarkable of the above singular family—a withered-looking stick-like creature, knobbed and ringed and coloured, and even cracked after the exact pattern of the browner stalks of its native tree. This most perfect simulator, like others of his simulating relatives, aids the deception of his figure by his branch-like attitudes and branch-like quietude (often maintained from morning till night), at which latter period he mostly prefers to exercise both his jaws and locomotive powers. After the usual changes, this curious caterpillar becomes, about July, a pale sulphur-coloured moth, remarkable for the elegant cut of its angular pinions, of which the hinder pair, being prolonged into acute tails, have given it the name of "*Swallow Tail*."†

When we look at the winged development of this stick-*animal* (a form of grace and beauty strikingly contrasted with the stiff rigidity of its cast-off covering) we can still trace a resemblance to the stick-*vegetable*, in its likeness to floral products, stalk-derived. The Brimstone Butterfly, that darling of the spring, has been long noticed for the resemblance of its delicate pinions to the petals of a primrose fluttering in the

* Vignette.

† *Ourapterix sambucaria*.

breeze. Scarcely less elegant, and somewhat resembling them in shape and hue, are the wings of our Swallow-tail moth, sprung of the walking branch. So, if we may fairly liken the earliest of our spring papilons to a primrose of the day, we may quite as justly compare our graceful flitter through the summer twilight to a primrose of the evening.

The prevailing hue of the above and other branch-like crawlers, found not unfrequently on the oak, elm, and other trees, is brown, varied, like bark, with tints of green and gray; thus, in their colouring as well as in their dry rigidity of outline, corresponding to their name of walking-*branches*; but there are a few much more delicate and tender-looking sprigs of the same family, which would be better designated by that of walking-*stalks*. Of this kind is a slender green Looper which, in the months of May and June, we have found feeding on the leaflets of the rose, or stretched out motionless, at some angle with the ravaged leaf-stalk, which it then exactly mimics. When this rampant stalk becomes a quiet chrysalis, self-suspended to a branch, it still retains its colour of bright vernal green, exchanged for orange and brown when it emerges, a pretty moth.

So much for walking-*branches* of British growth; neither, as aforesaid, is a walking-*leaf* a wonder to be seen alive only in foreign parts. We must wait, perhaps, till the arrival of July; but then, if, with eyes prepared, we look amongst the foliage of a mingled hedge, we are likely to detect, on a

bramble, a hawthorn, or a blackthorn, or may be on a willow, a leaf endued with life more than vegetative, albeit of *feuille morte* hue, and wearing little of motive semblance. We have said a leaf; but we should rather, perhaps, direct the unpractised eye to seek what more resembles a leafy group or cluster;* an object for which, on a transitory glance, the four large wings of the Lappet Moth† are very likely to be mistaken. These are of shaded brown, glossed with violet, stiff, strongly-ribbed, and deeply scalloped, and when the insect is in repose (its usual state in the day-time) they are so disposed by projection of the hinder pair beyond the foremost, as to deviate from the usual moth-like contour, and thus approach more nearly to that of congregated leaves.

The seeming vagaries of Dame Nature in thus, as it were, dressing up some few among her children in masquerade attire, have led to a deal of curious inquiry into the “why and because” of such unusual proceeding. Besides such copies as those above noted, wherein the animal is made to put on the vegetable form, there are noticeable among insects a number of remarkable similarities in colouring with the leaves, or flowers, or bark of the plants and trees they feed on, or frequent; and, what is yet more curious, with the dead and artificially-wrought substances, such as stone walls and wooden palings, on which they are most frequently seen rest-

* Vignette.

† *Gastropacha quercifolia*.

ing.* Of the kind of imitation last mentioned we have noticed several instances in the colouring of moths found commonly on oak palings. We have one in our possession wherein not only does the painting of the wings resemble the broader surface of the wood, copied as accurately as by the most skilful grainer; but even the transverse cutting at the pale's end would seem to have served as a pattern for the striated covering of the insect's shoulders.

It was supposed by Dr. Darwin that there is a general correspondence in colour between butterflies and the flowers they most frequent, and, theorist as he was, he concluded that such resemblance was certainly designed as a protection from their natural enemies; but, as well objected by a living naturalist,† it is only when the insect is at rest, that this similarity of hue with the object rested on (supposing its prevalence admitted) can serve it for an illusory defence against birds, dragon-flies, and other of its clear-sighted destroyers. The same protective purpose has been assigned to the more singular resemblances in form and coincidences of colour which we have just been noting; but such protection (if protection it be) is so partially

* A common but very beautiful moth, called the *Buff-tip* (*Pygæra bucephala*), displays a curious correspondence of colouring with the oak on which its caterpillar most often feeds, and whereon, as a winged insect, it is frequently found resting. The general hue of the wings is that purplish brown, mottled or powdered with silvery gray, so prevalent in the bark, especially of *decayed* oak-branches; while the *buff-tip* of each wing (to which it owes its name) resembles exactly the end of such a branch when obliquely truncated.

† Rennie.

afforded, and would, if more generally given, go so very far to subvert nature's own provision for the support of birds and carnivorous insects, that the opinion would seem scarcely tenable. Besides, there are not wanting, in the vegetable world, resemblances of objects in the animal almost as close as when the latter furnishes the copy. Yet no one, on the same preservative principle, has pretended to assume that the vegetable snail, star-fish, bee, fly, or spider, were endowed with semblances of living forms in order to protect them from their natural consumers, nor, we believe, in these latter instances has any "final cause" been ingeniously assigned. With these, in truth, as with various other of nature's proceedings, whether common or unwonted, it might doubtless be as well if philosophers would look longer before they "leap" to her supposed ends; thus adding to the treasures of their knowledge that acquirement (so difficult to human self-sufficiency) which a French naturalist terms, with French felicity of phrase, "*l'art d'ignorer*."* Thus much, however, we may perhaps be permitted to suggest on the subjects of the above and other singular deviations from the usual type of natural forms,—may they not, at least in part, have been designated by the Great Creator to awaken by the *uncommon* a greater measure of attention to the *common* wonders of his hand? May not these eccentric resemblances, in which, shooting beyond its regular orbit, one kingdom of nature seems to touch the exterior of

* Bonnet.

another, be likened, in effect on the observer, to comets in the firmament, which attract the gaze of the most incurious, while the glorious stars and brilliant planets are suspended motionless, or keep their equal courses without an eye or a thought uplifted towards their far-off mysteries?—From these curious outward resemblances, so obvious to the common eye, and striking even to the common mind, we are led, naturally, to consider other likenesses—or more properly analogies—which subsist, not only between the insect and the vegetable, but between all other orders of created being. In the delightful work of Kirby and Spence,* it has been justly noticed that “which-ever way we turn our eyes on the objects of creation—above, below, athwart—analogies meet us in every direction; and it appears clear that the book of Nature is a book of symbols, in which one thing represents another in endless succession.” And how speaks the eloquent Coleridge—the metaphysician and the poet—of the same exhaustless volume? “That, in its obvious sense and literal interpretation, it declares the being and attributes of the Almighty Father, none but the fool in heart has ever dared to gainsay; but it has been the music of gentle and pious minds in all ages;—it is the poetry of all human nature to read it likewise in a figurative sense, and to find therein correspondences and symbols of the spiritual world.”

Suppose we now con over, though but a child’s lesson, out of this universal volume, trying, however, imperfectly, to spell

* Introduction to Entomology.

and put together a few of its living characters as they stand connected by similitude, by mutual uses, or as mutually symbolic. By their *similitudes* we recognise them for the work of *one* Great Creator; in their *adaptations for mutual use* we read his skill and beneficence and providing care; and, in as much as we can decipher of their *symbolic meaning*, we adore the condescending goodness which, through the correspondent beauties of created objects, has surrounded us by images, faint but faithful, of all the qualities of that Divine Mind from whence they spring. Nor this alone; for, reflected in the same natural mirror, numerous also are the images for which we must seek originals—not in the attributes of the Divine Mind—nor yet in the corresponding features, which (marred though they be) still pronounce the human to have been moulded “after its likeness.” Destroying instincts and hideous forms are, no less than their opposites, reflections of things unseen; and where do these exist but within ourselves? in those spiritual evils (made natural) which have been permitted, in accordance with a law not more mysterious than *unerring*, to stamp with defacing impress a portion of every inferior order of Creation?

Our subject was commenced by a notice of a few remarkable objects in the insect world, which bear a particular resemblance to others in the vegetable kingdom. Let us now point out, as equally worthy of notice, though less likely to excite it, a few resemblances of a more general kind between these two

departments of the reign of nature. In external form, hues, and clothing, there is quite sufficient of general likeness betwixt plants and insects to stamp them as productions of the same designing mind and matchless skill. In clothing, wool, hair, spines, and scales, are common to both. Flowers alone emulate the colours of the more splendid butterflies and beetles. The delicate veined leaflet or petal are prevailing similitudes of form drawn yet closer in the papilionaceous tribe; the purple pea-flower and yellow broom telling us, in poetic personality,

“The butterfly all green and gold
To me hath often flown,
Here in my blossoms to behold
Wings lovely as his own.”—*Wordsworth*.

A general analogy of internal structure is well known to prevail throughout the animal and vegetable kingdoms; but of this correspondence there is perhaps no particular instance so close and striking as that which has been noticed between the origin and development of lepidopterous insects (moths and butterflies) and those of perfect plants. The egg and the seed—the caterpillar and the bud—the expanded insect and the expanded flower—are correspondences not fanciful but existent; and, as a flower in its rudiments can be discerned within the bud, where, protected by successive leaf-scales, it sometimes remains throughout the winter,* so the future butterfly lies enfolded within the numerous successive skins of

* As in buds of the pear-tree and laburnum. See experiments of Grew and Du Hamel, quoted in “*Insect Transformations*,” p. 136.

caterpillar and of chrysalis. Again, we may notice that the vital principle common to the insect and the plant—though in the latter unaccompanied by indication of mind—often puts on no less curious correspondences.

As well as ephemeral flowers there are ephemeral insects. The gauzy wings of the May-fly, like the delicate petals of the cistus, strew the ground in a few brief hours after their expansion; and the Favonia,* which displays its crimson glories in the beams of morning (as is the case often with the ephemeral insect) is, like it, dead by noon-day. There are certain flowers, such as the goat's-beard, &c., which are known to time their opening at certain hours of the day; and so, in like manner, various moths have been observed to emerge from their chrysalis-covering with equal regularity.

Again, the daisy, the pimpernel, and many other flowers, show the nicest sensibility to atmospheric changes, by always shutting up their petals at the approach of bad weather; and the bee, the butterfly, and other insects, with an instinctive prescience of coming showers, hide within the flower-cups, or close their wings, fearfully resting from their labours or their pleasures.

Numerous also are the properties and productions common to plants and insects, with a few of which we must close our very imperfect enumeration of resembling points between them. In fragrance, even the rose is emulated by a pretty

* *Tigridia favonia*.

green beetle* not uncommonly found near willow-trees, around which it perfumes the air. *Per contra*—and opposed to all “the sweets of Arabia”—there are the cockroach—the church-yard beetle—the foetid centipede, and other lurkers in damp dark places, both above ground and below, which resemble in ill odour, as they do in gloomy localities, the hellebores, the hemlocks, and the mandrakes of the vegetable world. And as a few among the flowers of the sun are not a whit behind their darker fellows in this one repulsive quality, so among insects, to say nothing of the pretty lady-bird, there is the green, golden-eyed, lace-winged fly,† that exhales an odour which, even *pour l’amour de ses beaux yeux*, and for the elegance of its form, one can scarcely pardon, any more than for its splendour, one can cordially admire that pride of the hot-house, the most beautiful but most foetid of the *Stapelias*, named, by the Dutch inhabitants of the Cape, the *Arabische Rose*.

The power of emitting light is another property, common, in some peculiar instances, both to plants and insects, the fire-fly—the glow-worm—and the electric centipede, each having its vegetable representative in the luminous *Fraxinella*, the *Euphorbia phosphorea*, and various plants and fungi in a state of decay.

For almost every vegetable production there is an analogous insect secretion. To say nothing of honey and bees’ wax, which may be viewed rather as vegetable products animalized,

* *Cerambyx moschatus* (musk beetle.)

† *Chrysopa perla*.

there is the white insect wax of China produced by the *Cicada limbata*, made into candles, and paralleled both in quality and use by the tallow-tree,—a native of the same empire. For vegetable *gums*, we have the insect *gum-lac*; for vegetable *dyes*, the insect *cochineal*, *galls*, and *chermes*.

From the above and various other mutual resemblances, let us take a glance now at that obvious and beautiful *relation* between insects and the vegetable kingdom, which consists in their mutual dependency and use. As one of its most striking examples, we must notice again the appearance of various caterpillars as being generally simultaneous with that of the leaves on which they usually feed, and that of butterflies with the opening of flowers on whose nectar they regale.

The bee and the blossom are no less evidently of mutual assistance. Everybody knows that the bee could not live without the flower, and every botanist is equally aware that many flowers would become extinct, were not bees and other insects, by the transmission of pollen, to be unconscious agents in their propagation. Besides affording them a supply of food, there is no part of a plant—root, stem, bark, leaf, calyx, flower, fruit—which does not serve as an abode to many insects in one or all of their successive stages. Indeed, without plants, we see clearly that insects would have no existence—not even the carnivorous tribes, since even these prey upon vegetable-feeders. The uses, also, of insects to plants, besides that already noticed, though less obvious, may probably bear

a greater proportion to their evident injuriousness than we are apt to think. A curious though certainly very partial service of this nature, received on the side of the vegetable, is exemplified in the nourishment which some fly-catching plants are supposed to derive from the putridity of dead insects imprisoned within their flower-traps, their pitcher-shaped leaves, or in the viscid exudations of their joints.

If, leaving the vegetable world, we were to mount upwards in the scale of animated being, we should find amongst fish, reptiles, birds, and quadrupeds, a variety of similar instances, wherein, by resemblances or analogy, by dependence, or as mutually representative, these all stand connected with objects in the insect kingdom. We may from time to time, notice some of these relations incidentally; but to pass over, now, the intermediate orders of creation, let us see whether lordly man, as well as the lowly plant, has not his analogies, at least symbolic, with the insect he despises.

The mind of man, as it exists in infancy, has been aptly likened to the seed of a plant—considered as possessing, in miniature, the trunk, branches, leaves, and fruit of the future tree; and, agreeably to such a notion, it has been observed that the highest degree of cultivation, of which it is capable, consists in the perfect development of that peculiar organization which as really exists in infancy as in mature years.

Having noted already the analogy of insect development, from the egg up to the winged estate, with that of a vegetable,

from the seed up to the flower and fruit—it scarcely needs, the above admitted, to remark that the human mind finds its natural parallel (only one yet more striking) in the insect as well as in the vegetable world.

In the shapes also of good or evil, which the expanding mind assumes, we shall still find, in insect forms and their marked characteristics, similitudes—if not more apt, at least more easily observed, than those presented by larger tribes. In proportion as, diverging by perversity of free will from our divine type and pattern, we resemble or make ourselves the moral counterparts of the tiger, the fox, the hawk, the serpent, we are of course as justly symbolized by those insects which have been observed to concentrate in their pigmy forms the very *essence* of the same instinctive dispositions, such as the cruel Mantis, the fierce predatory beetles, the wily antlion, the treacherous and cruel spider.

The same applies to those among us of gentler frame, the lambs and doves amidst the wolves and hawks of human society, which are in like manner aptly symbolized by insect tribes of gentle habits (especially the horned and vegetable-feeding beetles), which have been considered to represent the grazing quadrupeds.

Others of our qualities—our industry, our prudence, our fickleness, our temerity—are exhibited also in the tiny individualities and miniature institutions of insects and insect societies, none of the larger animals, solitary or gregarious,

reflecting us in these respects so faithfully as the bee, the ant, the butterfly, and self-destructive moth.

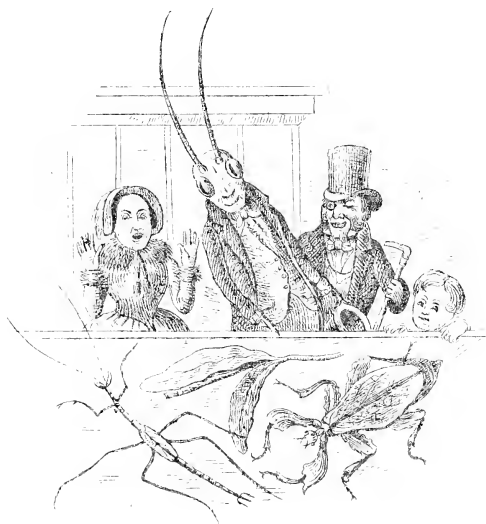
Or if, lastly, and as more generally considered, we view both insect development and insect perfection as strictly representative of our spiritual progression and final state, then, while we look delighted on a host of innocent and beautiful flutterers, as creatures progressing towards that happy state, can we shut our eyes upon their numerous opposites—winged creatures, fierce and destructive, or creeping things in preparation only for such perfection? And if the former, then must the latter have corresponding forms of spirit—forms which, in all their dire maturity, are existent in the world unseen, though nearer than we think of, and which *may* be also (and awful is the thought!) in *course of daily development and progression within ourselves*.

Besides these insect “Beelzebubs and Belials,” so named from their figure, attributes, and dark localities, and more destructive than them all, though in outward semblance less repulsive, there is the insidious tribe of *Ichneumon flies*, the slow devourers of living caterpillars; and herein the striking emblems of those lurking, parasitic vices which prey on and destroy the soul,* the “*Angelica forfalla*” which they never suffer to arrive at the bright maturity for which it was created.

In connection with Insect Development regarded as a type of our spiritual progress, we may mention here a speculative

* Kirby.

notion with which the former is particularly accordant. It is an idea entertained by some, that within the material cover which constitutes our natural frame there exists a spiritual body, endowed with spiritual organs. *This* (in their opinion) constitutes the man,—*this*, the inward form in constant course of being moulded into beauty or deformity by moral discipline and culture,—*this*, the building to which the corporeal frame is but a scaffold, thrown down after performance of its purpose, in a spiritual erection,—or (returning to our insect analogy) *this*, the winged Imago, which, on entrance to its highest stage of being, casts off for ever its material encasement, as an emancipated butterfly the confining shell which served once as its chrysalidan cover.



'Queer creatures! neither gulls nor grasshoppers.'



MOTHS AS IDLERS.

“———painted populace
That live in fields, and lead ambrosial lives.”

WHEN a man, having wove himself a robe of dignity, built himself a tower of fame, or worked himself into a mine of riches, is able to throw aside his tools, and put on his holiday attire,—then good bye (usually) to the interest, curiosity, and sympathy with which we may have been following his laborious career. We may look up with admiration, but we tire of looking up very long, at an object of any description which stands still at its culminating point,—which has reached its

utmost degree of height or perfection. We may pronounce it very grand, or very good; but there is little more to be said about it.

Much, then, as it is with a man on the pinnacle of a laborious ascent, it is with a *moth* in the completed stage of its existence. In the caterpillar's state of labour and progression (that in which we have already briefly viewed him), whole volumes have been written, and others may be yet to write, concerning his destructiveness, his ingenuity, his perseverance; but when, after an interval of rest and concealment, he re-appears in a winged form, his other characteristics seem, as it were, lost in his exterior perfection. We look and admire, but have little, comparatively, to record about him.

Various, as we have seen, are the resources—curiously contrasted the instincts, of different species of moth caterpillars; but the history of one moth is pretty nearly the history of all—especially with the tribes which fly by night; their proceedings being on that account involved, of course, in additional obscurity. The chief diversity of these insects, in their perfect state, belongs then mostly to their outward form and colouring; and in these is to be found a variety, endless and admirable.

Moths have been arranged under two general divisions: *crepuscular*, or those that are seen on wing at twilight; and *nocturnal*, or night-fliers; the latter comprising by far the largest number. The twilight family consists chiefly of *hawk-moths* or *sphinxes*; the former appellation being founded on

the moth's hovering mode of flight,—the latter, on the caterpillar's remarkable form and position when at rest. This is a beautiful and interesting tribe of insects, associated with summer dawns and summer twilights—opening and closing flowers—morning and evening stars—and all that is calm and subdued, opposed to the glare and gloom of nature.

When the gaudy butterfly has folded her wings for sleep, and while the dark night-flying moth is still lurking under leafy covert, various sphinxes may be seen darting rapidly from flower to flower, or busied in rifling their sweets as they hang suspended over their honeyed cups, like the bird of rapine

“ that, poised in air,
Flaps his broad wing, but moves not.”

These insect tipplers imbibe their deep potations by unrolling their usually coiled tongues, which are hollow tubes, often of prodigious length, and plunging them to the bottom of the nectaries they drain.

Many of the hawk-moths are named after the trees and plants which furnish the favourite food of their caterpillar life; and from among these we shall select, as greatly distinguished for size and beauty, the “*Convolvulus*”* and the “Privet.” The former, called also the “Bind-weed” and the “Unicorn” hawk-moth, is a splendid specimen of its kind, if the term “splendid”—so often ridiculously mis-applied—may be aptly employed with reference to its wide expanse of wing

* *Sphinx convolvuli*. (Frontispiece.)

(reaching often to an extension of four inches and a half), and to the exquisitely varied yet sober pencilling, black on a ground of ashy gray, wherewith these ample pinions are elaborately adorned. The body-colouring of this fine insect is of a gayer description, being composed of alternate stripes of black and rose-colour; and on the shoulders—or what, in entomological phrase, is termed the thorax—is a singular black badge, resembling a horse-shoe. This thorax, as well as the body, is of bulk proportioned to the powerful wings which have to transport or uphold it in suspension; while the massive head, large projecting eyes—dark by day and luminous by night—the broad, straight, rigid horns or antennæ, and the trunk or sucker, when uncoiled of prodigious length, are all in accordance with its elephantine character among the race of moths. The *Convolvulus sphinx*, though not very common, is said to be well distributed through Britain. In one September we met with two specimens at Hornsey.

The hawk moth of the Privet,* can boast dimensions, both of wing and body, but little inferior to his cousin of the *Convolvulus*. In richness of colouring, he greatly excels him, inasmuch as the prevailing gray of his upper wings is contrasted in the lower by a fine rose-colour, laced with black bars; the body, likewise, being banded with black and deep rose or purple.

Of a different genus,† and of size very much inferior to the

* *Sphinx ligustri*.

† *Macroglossa*.

two last, but more interesting, perhaps, than either in its habits and associations, is the hawk-moth called the "Humming-bird."* This name is derived from the vibratory sound emitted by the wings of this pretty insect, as it hangs suspended, morning and evening, above the flowers, of which the honeyed treasures, however deeply hidden, are never inaccessible to its prying tongue. Not even the long, narrow flagons of Marvel of Peru, or trumpet honeysuckle, can protect their delicious nectar from the long, pliant trunk of the *humming-bird* hawk, who delights, also, in the assembled honey-cups of composite flowers—likewise in sweet geraniums,—tempted by which, it often commits its harmless robberies in greenhouse as well as garden. The anterior wings of this curious moth are dusky brown, striated and barred; the hinder, white or rusty yellow; and the body, which is short, is variegated at the sides with small tufts of black and white, finished by a large black bush at its extremity. The "humming-bird" is seen frequently in most parts of England, but especially near the sea-side, from May to October.

A word now for the hawk-moth "Death's head,"* to whom, perhaps, we ought to have given precedence over all the above, on account of his yet superior size and the dark celebrity of his name; but though called a "hawk," and long classed with the sphinxes, he is not considered now as belong-

* *Macroglossa Stellatarum*. (Vignette.) † *Acherontia atropos*. (Frontispiece.)

ing strictly to that family, from which he is distinguished by the very inferior length of his trunk, and also of his antennæ. His upper wings, which reach often to the extent of five inches, are of deep brown, beautifully variegated with black, mingled with rusty red, and powdered with gray; the lower being of a deep ochreous yellow, barred with black. The body is somewhat similarly coloured in black and yellow stripes, and on the shoulders or thorax, in lieu of the black horse-shoe borne by the *Sphinx Convolvuli*, he exhibits (awfully conspicuous in yellowish white upon a ground of darkness!) the grim cranium—the death's head and collar bones—to which he owes his redoubted name.

We shall have occasion to speak elsewhere of a few other notabilities belonging to this singular insect—especially of his melancholy cry and the superstitious dread wherewith he was once, and is still partially, regarded by man. We shall now, therefore, only advert to one other of his peculiar habits, which has given him, amongst other appellations, that of the “Bee Tiger.”

We have noticed already the shortness of the Death's-head trunk, as compared with that of a true sphinx; it consists, in fact, of only a short, stiff proboscis, instead of a long pliant sucker. In common, however, with the hawk-moth family, he is a prodigious lover of honey. Either, then, for want of a more convenient instrument for extracting nectar, fresh drawn from tubular flowers, or in order that he may quaff it on a

scale proportioned to his bulk, he will frequently brave, singly, and unarmed as he is, the numerous poisoned arrows of a beehive garrison, with a view to pilfering and regaling on its stores. In this bold undertaking he seldom fails, owing impunity, as it would appear, almost entirely to the paralyzing power of his formidable voice. His approach to a hive by twilight, or the glow of a harvest moon, is a signal for general alarm and commotion, and each individual bee, at sight of this dreaded visitant, or sound of his boding cry, shakes its wings in fearful tremor, or responds to the wailing trumpet of the invader by a peculiar buzz, expressive of alarm. Even the bee sentinels, keeping their moonlight watch around the gate of their waxen city, shrink appalled as before an apparition, when the dark wings of the Death's-head overshadow their beat; and the robber, entering, proceeds to regale unmolested by the trembling bees, whose wonted courage and sagacity seem on this occasion to give place to human ignorance and folly. As soon, however, as the departure of the satiated marauder relieves the panic-stricken citizens of their terror, they commence taking the most active measures to guard, in future, against being thus robbed before their faces; and the chances are, that should the death's-head visitant return again on the ensuing night, he will find all entrance barred by a strong waxen wall, built within the doorway of the hive, and leaving only just sufficient space for the exit or entrance of a single bee.

The hawk-moths (so called) of the *Lime*, the *Poplar*—also

the "*Eyed*," are each beautiful insects in their way ; but in the absence of long tubular trunks, and consequent inability to feed hovering on wing, the appellation of "hawks " scarcely befits them. They are also distinguished from the true sphinxes by the form of their antennæ, and by the dentated margins of their foremost wings.

We have no space here for minute description of the markings, variously shaded, striated, and clouded, of their usually somewhat sober-suited pinions, of which, in the "*Lime*,"* the prevailing shades are olive-green; in the "*Poplar*,"† grayish brown and rust colour; in the "*Eyed*,"‡ likewise gray and brown, relieved in the hinder pair by carmine red, with a large *ocellus* (or eye) of blue, brown, and black.

In order, however, that our unscientific readers may have a better chance of observing for themselves both the last-named and preceding moths (all well worthy of admiration), we shall give a short description of each in its caterpillar state—that wherein it may be the most easily procured and reared to perfection.

The caterpillars of hawk-moths are, for the most part, very distinguished animals of their kind. They are generally large, with skins smooth or curiously shagreened; most frequently coloured green, and adorned on each side by oblique stripes of yellow, blue, or crimson. They may be further and easily

* *Smerinthus Tiliae* (Lime Hawk).

† *S. Populi* (Poplar Hawk.)

‡ *S. ocellatus* (Eyed Hawk.)

discriminated from the "vulgar crew," by a stiff-pointed horn rising from near the tail; also by the remarkable elevation (when at rest) of the head and shoulders, while the hinder legs attach them firmly to a supporting branch. From this peculiar position, they have derived the Linnæan name of *Sphinx*—after the fabled monster of antiquity.—Now for a few more of the distinctive features which belong, in their first estate, to the "Hawks" above noticed, namely, the "Convolvulus," "Privet," "Humming-bird," "Death's-head," "Lime," "Poplar," and "Eyed."

The Caterpillar of the "Convolvulus," so called from its frequenting and feeding on that most destructive of weeds, but most elegant of wild flowers, the large white bindweed, is somewhat variously coloured; but usually of a bright green, with black or brown spots, and oblique stripes of yellow at the sides.

The beautiful Sphinx of the Privet is produced from a caterpillar* well worthy of the perfect insect. Its smooth doublet of bright apple-green is laced by seven oblique stripes of white and purple, and buttoned (as we may fancifully term it) with golden studs,—the little circlets of orange-yellow which surround the stigma, or breathing-holes, on either side. A black and yellow horn completes its exterior adornment. It may be found in July, August, or even as late as September, feeding on the leaves of privet, lilac, ash, and elder.

* Vignette to "A Summer's Day Dream."

The caterpillar of that curious and pretty little honey-sipper, the Humming-bird hawk, is green, variegated with white, and it sports a tail somewhat more conspicuous, as proportioned to its size, than those of its bulkier cousins above mentioned. It is a feeder on that rough and trailing clinger, well known as cleavers, clivers, and goose-grass, also on the ladies' bed-straw.

The Death's-head caterpillar does not partake at all of the lugubrious character or colouring of its perfect form, being gaily painted of a fine yellow, obliquely striped with green, and further adorned on the back by longitudinal blue and black spots. It is sometimes found in August, full grown, on the potato and the jasmine; and, after self-interment, bursts its temporary grave, to flit, a shape of terror, through the autumn twilight.

The Hawk-moth of the Lime affords us, in its caterpillar, a pretty specimen of that shagreened skin, roughened by raised dots, which is common to several of its tribe. Its colour is a delicate green, adorned with the usual oblique stripes, generally of carmine red; but these are varied, and sometimes wanting. The body of this caterpillar, as well as most of the preceding, lessens towards the head, which is small, with a front of mitre-like form.

Some of the hawk caterpillars of another genus deviate yet further from the common shape, by this tapering of the body towards the front being so considerable as to give to the head and neck, combined, the semblance of

a swine's snout. They are hence called by the French, "*Têtes de Cochon.*"

The Elephant Hawk, though in size no elephant of its kind, is produced from a "pig-face" of this description, found not uncommonly on the willow herb and ladies' bed-straw.

But we must no longer creep with the hawk caterpillars, or even hover, at morn or eve, with the "hawks" themselves, over the dewy flowers, for we have yet to accompany, in their gloomier flights, a select few from the nocturnal *Phalænæ* which compose the main body of moths proper, or second grand division of *Lepidopterous* insects. Among these, the night-fliers (holding a reverse proportion to those amongst the feathered race) far exceed in number, not only the evening flitters of their own division, but also the "painted populace" which sip honey in open day.

To sixty species of British butterfly, Kirby tells us of one thousand of moth; and in all countries moths are considered to be infinitely more numerous than butterflies, though the foreign specimens in cabinets are comparatively few. Independent of their usual time of flight, the *nocturnal* are distinguished from the *twilight* moths, by the shape of their antennæ, which, instead of enlarging gradually towards the end (as in "hawks") or ending in a club (as in butterflies), *diminish* in thickness from base to apex, and are generally long, flexible, and often toothed, or resembling feathers.

Now for our select few amongst the numerous night-fliers.

But how to choose out of such a phalanx? That is the question; and suppose—taking a cursory review of it, with reference to *size*, *colour*, and *form*—we note a few individuals among the most distinguished for either attribute.

For *size*, we may give priority to the Great Goat Moth, of whose bulky body and dusky wings, of from three to four inches of expansion, we are not unlikely to catch a glimpse by the light of this August moon. This is the great *Cossus*, of whose proceedings as a carpenter caterpillar we have already given some description,* leaving but little to be said of him here, except that he is wont, about July, or early in the present month, to emerge from his wooden cell, in the heart of oak or willow, in the winged form of perfection, which has taken four years to complete, but which now, in fewer weeks, will cease to exist!

“And no great loss either, this dingy insect owl, to the world of grace and beauty!” might some, perhaps, be ready to exclaim, on seeing a specimen of the Great Goat Moth. But differing, with all courtesy, from the taste which can discern no beauty save in varied colours, we must be allowed to express, for ourselves, no little admiration of the sober painting—the silvery or ashy gray, clouded with brown and striated with black, which, not unlike the plumage of some veritable owls, adorns the plain-cut pinions of this “owlish” moth.

But come, ye lovers of the brilliant! we can now bring

* See “Moths as Operatives.”

before your notice a night-flier, worthy, you must allow, to compete with the gaudier butterflies of day. This is none other than the Emperor Moth, a right royal insect, arrayed in royal purple. A shade of gray, in unison with his nocturnal character, forms indeed the groundwork of his wings; but these are enlivened by white bands, contrasted with others of dark brown, and tinged, and waved, and tipped with purple, while from the centre of each looks out a large eye (*ocellus*), conspicuous in its white iris and black pupil. Though in respect of size inferior to the "Great Goat," the Emperor can boast his *inches*,—in his own wings two and a half's expansion,—in those of his empress, nearly three; though these truly are nothing compared to the inches (eight or ten!) displayed by the "Atlas Moth" of South America and China; a giant belonging to the same family as our Emperor and the "Peacock" of Southern Europe. Having described already, in a more proper place, the ingenious labours of a certain flask-making weaver,* we have only here to remind our readers that this king of his craft is none other than the caterpillar of our Emperor Moth. Whensoever they may be so lucky as to find him (most likely on a willow or a blackthorn), they may at once recognise him by his handsome green doublet, banded with black, and studded with pink, hairy, star-like tubercles,—badges of distinction, which mark, even in his meanest state, this moth-monarch of the night.

* See "Moths as Operatives."

In accordance with that beautiful harmony prevalent throughout the works of nature, the general colouring of moths, both of evening and night, is of that subdued tone which, like night-blowing flowers—the “*Flores tristes colore et odore*”—seems to correspond best with the hours of their appearance. This usual absence of brilliant tints is, as we have already exemplified, amply atoned for by the soft, richly-blended shading, and exquisitely pencilled variety of pattern, which render the wings of moths perfect *bijoux* of natural mosaic; but there are not wanting among them scattered specimens painted in another style—in bright and glowing colours, laid on in broad effective masses. Of this we have a ready example in one of the commonest, yet withal handsomest of our night-fliers, yeleft “the Tiger;” the rich emblazonment of whose ample pinions has been likened by no mean poet to that of an ancient window:

“ All diamonded with panes of quaint device,
Innumerable of stains, and splendid dyes,
As are the Tiger Moth’s deep damask wings.”*

The prevailing hues of this beautiful genus are black, crimson, and yellow, or cream-colour, disposed elegantly in spots and bars. The most common of several species is the “Great Tiger,”† found in all parts of Britain from June to August. Its foremost wings are of rich dark brown, varied by zigzag bars of cream colour; the hinder, of brilliant scarlet with

* Keats.

† *Arctia caja*.

black spots, surrounded mostly by a yellow circle, the body being also scarlet barred with black.

The Tiger caterpillar, seen more frequently even than the moth, and sometimes in winter as well as summer, has a black velvety skin, covered with long brown-tipped hairs, proceeding from white tubercles. It is a feeder on dandelion, lettuce, and other salad plants, and, from its habit, when touched, of rolling round (an innocent measure of self-defence), has acquired the misnomer of Devil's Ring.*

A few among other very differing night-fliers are distinguished by gay colouring. There is the beautiful *Red Underwing*, the *Yellow Brimstone*, the little bright *Green Moths of the Oak*, and the more splendid "*Emerald*" of the elm and lime; with many conspicuous in the gloom from their robes of white. And there wants not gilding and lacquering, as well as painting, in the blazonry of moth "standards," as in the "Υ," so called from that character inscribed in gold or silver on its wings, and in the "*Burnished Brass*," a name derived from its metallic yellow lustre. The two last, though classed among those composing the nocturnal division of their tribe, are frequently, as well as some others, to be seen

—— "floating amid the liquid noon."

The "Υ" especially, may be noticed now and on through October, suspended vibrating on wing; while it sips, after

* Vignette to "Life in Death," vol. i.

hawk-moth fashion, the sweets of various flowers; those, in particular, of its favourite *Knapweed*.*

We must reserve for another place some notice more in detail of the exquisite painting and gilding bestowed by Nature's hand upon various gems of the insect race; but while speaking of moths with reference to remarkable colouring or remarkable size, we cannot here entirely pass over that tiny tribe which begin life as leaf-mining caterpillars.† These have been justly designated as "Miracles of Nature," resplendent with gold, silver, and pearl blended with infinite taste and beauty, and it is of these that Réaumur has spoken as of "*Papillons de la petitesse desquels on est fâchés.*"

Yes, we regret their minuteness, because our own capacities are so little, and our senses so limited. We may be inclined to wonder, also, that so much ornament should be lavished upon forms well-nigh lost (to *us*) for want of magnitude; but when we remember that He to whom the immeasurable mass and the invisible atom are both alike, has seen fit to bestow well-nigh as large a portion of a gift more precious, that of instinct, or "animal *mind*," upon an ant as upon an elephant, we can wonder no longer that the wing of the tiniest moth that ever issued from between the membranes of a leaf or the skin of a barleycorn, should be deemed worthy of an inlay as beautiful and more rich than that of the comparatively giant Death's-head, or yet bulkier *Phalæna Atlas*.

* *Phrygia nigra*.

† See p. 228, "Moths as Operatives."

Having said as much of our night-fliers, with reference to peculiarities of *size* and *colour*, as our prescribed limits will permit, we shall now notice a few of them distinguished especially with regard to *form*. Amongst the latter is the moth called the Oak Lappet,* already made known to our readers as a "*Walking Leaf*"—the only specimen of British growth; and the very image of a "*feuille morte*," or, more properly, of several dead leaves together, does it present, in its large wings of rusty brown, deeply indented, and projecting, the hindmost beyond the foremost pair.†

These moths are further remarkable for corporations of most portly dimensions, especially in the female, from whence their scientific name of *Gastropacha*,—signifying, thick bodies. Their caterpillars are dusky gray or brown, with two velvety blue spots or slits behind the head, and along each side is a row of pendulous projections, which, from their fancied resemblance to lappets, gave rise to the popular name of "Lappet Moth." It is found, as a caterpillar, on various grasses, the sloe, pear, willow, bramble, and hawthorn—survives the winter, enters in May the chrysalidan cover, and thence expands about mid-summer a mimic leaf of autumn.

In the majority of moths the hinder wings are rounded; but in the "Swallow-tail" we meet with a remarkable deviation from this usual form—the hindmost pinions being prolonged, as well as the foremost, into an acute tail.

* *Gastropacha quercifolia*.

* Vignette to "Resemblance and Relation."

Commencing its nocturnal rambles before the usual conclusion of our evening walks, the delicate sulphur-coloured pinions of this pretty insect often flit past us in the June and July twilights; when, in accordance with a comparison already suggested, we might fancy it an evening primrose on the wing. We have noted also its earlier and certainly much closer resemblance to a vegetable form, while yet in the shape of a "*walking-branch*" caterpillar of the elder, whereon, in the month of May, it is often to be found, either as a brown stick, or as a brown chrysalis, enclosed elegantly and curiously in a cradle of leaves, wherein it hangs suspended like the nests of certain foreign birds.*

The wing of the moth, as of the butterfly, generally owes its beauty to the rich mosaic of minute scales or feathers by which it is overlaid, entirely, as it would seem, by way of ornament; for the creature can use its pinions when reduced to transparent membranes, as well as other insects, or a few of its own tribe in which they are naturally clear. Its progress through the air is no more impeded by the rough handling of wantonness or weather, than the flight of true genius by the rough rubs of fortune, however they may strip its soaring energies of the variegated trappings of worldly splendour. There exists, however, a singular and beautiful family of moths, called the "Plumed," to which the above remark is by no means applicable—the wing feathers of this tribe being

* Vignette to "Moths as Operatives."

as essential to flight, and serving as much to form its organ, as those in the pinions of the feathered race.

Who has not noticed, in gardens and by hedge-rows, floating towards evening in the summer, an object resembling a large tuft of down, or a snow-flake dropped (a marvel !) from a summer cloud ? When followed to its place of settlement (usually some plant or lowly shrub) this questionable wanderer will prove one of the moths just mentioned,—that, probably, designated the “Large White Plume;”* a little creature (large only by comparison) with wings consisting each of a single row of long quilled feathers of spotless white and silken gloss, the delicate body and slender legs being of the same unsullied hue, contrasted only by large black eyes. This fairy moth, than which few more elegant and graceful flit beneath the moon, comes of a greenish white, dusky-spotted caterpillar, common on the nettles of every hedge ; and the “White Plume” has a cousin, less fair and less in size, but not less beautiful than herself, yept the “Twenty Plume,”† from the number of separate feathers of which her variegated brown pinions are composed.

Though of course less conspicuous than the former, the latter is even more easily and frequently to be met with ; for, as if inviting the admiration she so well deserves, this beautiful little flutterer often enters our dwellings, and spreads her feather-fans for our inspection as she dances in the window—

* *Pterophorus pentadactylus*.

† *Alucita hexadactyla*.

a place of shelter to which she often resorts from the bleak winds of March, or the early frosts of late October; for our little "Twenty Plume," fragile as she looks, is no mere bird of summer.

Having made allusion to certain moths wherein are altogether wanting those merely ornamental appendages, the coloured scales or feathers which usually clothe the wings of their tribe, we must say a little more about them; though that little will here be somewhat out of place, inasmuch as the few "clear-winged" belong more nearly, by habits and other affinities, to the Hawk and Twilight Moths first discoursed of, than to the nocturnal division from which our subjects have been subsequently drawn.

Towards the end of May there may be seen, sipping honey on the wing, (chiefly, however, in the woods and gardens of Surrey, Kent, and Essex), an insect with a short, robust, yellowish-olive body, not very dissimilar to that of a drone bee, except that it is distinguished by some terminating rings of deep red, finished at the extremity by a black and yellow tuft. From its clear, transparent, brown-bordered wings, none but the "initiate" would take it for other than a curious sort of fly or bee, whereas it is in fact the "Bee Hawk-moth,"* one of those above alluded to. Of another family,† but resembling the last in naked transparency of pinion, there is the "*Bee Clear-wing*," which, in the heat of noonday, is accustomed to

* *Sesia fusiformis*.

† That of *Ageridæ*.

flit rapidly from flower to flower, alighting on their corollas to extract their sweets.

From moths with wings painted in mosaic, wings of feathers, and wings naked, we come lastly to moths without any wings at all.

Wingless moths! Yes, such there are; but all, like that wingless beetle called the glow-worm, to be found among the females of their race. Of these, a few cannot boast even the vestige of a pinion, and only mere apologies for such appendages are given in the instance by which, as one of the most common, we shall illustrate this somewhat niggardly vagary of Dame Nature.

There is a certain moth, classed among the nocturnal, but often to be seen abroad in August sunshine—an active, restless, prying little fellow, who can boast, besides a single pair of horns or antennæ magnificently feathered, a double pair of bright brown wings, the foremost dotted each with a spot of white, and of as ample dimensions as any reasonable little moth need desire. This gay, sunshiny “nocturnal” is called the “*Vapourer* ;”^{*} but, if we may be allowed a pun upon his name, it is his lady to whom the malady of vapours might seem the most likely to be incidental, seeing that while her mate is taking his winged pleasure abroad, she (poor soul!) is compelled to sit at home, or just creep about its precincts, because she has not a single wing to fly with. In truth, a strange,

* *Orgyia antiqua*.

homely-looking creature for a moth is this Lady Vapourer, with her great heavy brown body, making her seem *all* body and nothing else; for not only wings, but even head, horns, legs—each of which are of the smallest possible dimensions—seem sacrificed to the formation of that bulky corporation—a perfect sackfull of eggs, which are actually discernible through the skin.* How this most matronly insect (being from her earliest moth-hood thus a stay-at-home) is accustomed to deposit these her eggs upon the silk cocoon, which, after having shrouded herself, becomes a warm winter cradle for her embryo offspring; how the latter, in due season, grow up into handsome tufted caterpillars;—these, and perhaps a few other particulars, which concern the domestic economy of the “Vapourer,” have they not been already written in our brief Chronicles of the Moths of England? These we must, for the present, bring to a close by a few random and general observations.

In a creature shunning usually the light of day, it would seem a strange infatuation to be lured by the glare of a taper to its own destruction; and wherein consists, to a misguided moth, the charm of light, remains, we believe, somewhat of a mystery, though the doubt is not destitute of at least conjectural elucidation. It has been discovered that many moths carry about with them lights of their own, being furnished, like grimalkin and her night-prowling cousins of the

* See vignette for figures of the “Vapourer,” male and female.

wood and wild, with "een of burning coal"—luminous eyes, which either serve as travelling lamps in their nocturnal flights, or are intended for the purpose of hero torches or lights of love. The latter is the general supposition; but in this case they might be expected to belong more peculiarly (as with the glow-worm) to such wingless females as the "Lady Vapourer" above noted, or to the winged ones, which are, for the most part, of a scarcely less stay-at-home character; whereas it has been observed,* that the candle-light sufferers (many of them taper-bearers) are generally of the opposite sex.

But for whatever purpose they may be bestowed, the frequent possession by moths of these tiny sparks, and probable perception of them in one another, may fairly account for light, artificial, and on a scale of such comparative magnificence as that of a wax taper, or even a farthing dip, being an attractive object to the bamboozled instinct of our nocturnal fliers. Yet why, then, are gnats and that large *Tipula* known as Father Longlegs, tempted so often by the like allurements to the like act of involuntary self-destruction? In truth, we cannot say; so, leaving conjecture as to the uses and the consequences of possessing *eyes of light*, we shall only add, that among the moths by which they are possessed, are the "Convolvulus Hawk," the "Great Goat," the "Golden Tail," and the "Y;" although the latter, as we have noticed, flies mostly in the sunshine.

* By Reaumur.

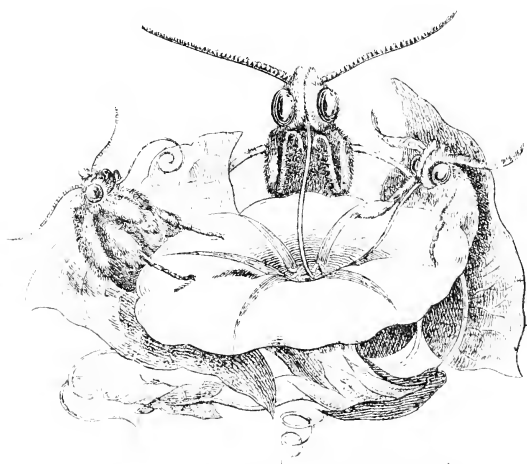
Those who are in the habit of ever thinking at all about things not present to their sight, may sometimes wonder what has become, in broad daylight, of the numerous moths which they may have seen flitting in the warm twilight of the evening before. A good number of them will never so flit again (unless in the shape of ghosts), because, in fulfilment of their being's end, their bodies have served to pack the craw of some rapacious dor hawk, or bat, or fern-owl; but the more fortunate survivors—making to themselves a night in noon-day—are to be found on the gloomy north of trunks of trees, or beneath their leafy coverts, enwrapped in what appears to us like slumber;—their wings overlapping,—very rarely, like the butterfly's, erectly folded; their antennæ curiously curled. Sometimes, as if in veritable sleep, they will fall from their green couches like a shower of blossoms, when the bow they occupy is shaken. Of this the little green moths of the oak have been adduced as a familiar instance; but others, as though their open-eyed repose were lighter or more fictitious than any cattish slumber, will fly off alert and active on the flutter of a bird, the sound of a foot-fall, or the rustle of a leaf.

With regard to one habit, that of feeding, our *fainéant* flutterers widely differ. We have given a notion of the luxurious labours, in this way, of the honey-sipping "hawks" and sphinxes; and we have seen a Y moth suck sugar for two hours on a stretch, dissolving it from the lump by a liquid let

down through the tubular pipe wherewith he drew it up in syrup. Réaumur speaks of others which regaled on sweets from off his finger, "*comme aurait pu faire un oiseau privé.*"

To many, on the contrary, of the moth fraternity, eating would seem a thing not only undesired, but absolutely forbidden, by the absence of any perceptible organ wherewith to eat. It is thus, amongst others, with the "Great Goat," the "Emperor," and the moth of the silk-worm, which latter, besides having no tongue to use, seldom takes the trouble to employ its wings.

Thus is the most noted and useful of all "Moth Operatives," of all "Moth Idlers" one of the most pre-eminently lazy.



"Luxurious feeders amongst lazy flutterers"



